



# COAL AGE



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## How Are You Educating Your Children?

**T**HE FATHERS of growing boys around our coal-mining camps would do well to ponder these words of the bishop.

Too many of them—frugal coal miners and company men as well, who have laid by a small competency—so train their sons that they are fitted only for a life of idleness. These fathers realize the truth expressed by the bishop's maxim so far as their own work is concerned, but do not get it through their heads that it applies with equal force to the learned professions.

Such men, because they have toiled long and hard, often with meager rewards, decide that they will choose differently for their sons, and in consequence do not allow them to labor around the mines nor soil their hands and clothes, but urge them to acquire an education and fine manners so that they may secure a sufficient income to live in ease.

Because such fathers have passed through life without an education, they do not realize that nine-tenths of education is also drudgery and that it takes the same amount of determination to pull through the periods of drudgery along the educated route to bankable knowledge that it does to win a competency through manual labor.

If fathers could relieve their sons of the

**"Of all work that produces results, nine-tenths must be drudgery."**

*—Saying of an English Bishop.*

tribulations apportioned unto them by Fate by assuming themselves all such tribulations, the sons of this world would have a tolerably easy time of it.

It generally happens, however, that when a father attempts to shield his son from a predestined rap the father gets the rap and the son gets two whacks immediately thereafter.

At any rate, many fathers who stint themselves for years that their sons may be advanced a round or two on the social ladder often live to see their boys disgraced and dropped back to a station in life below that occupied by the parents themselves. When such a father looks back at the wreck of his boy, he sees too late that the young man followed instructions implicitly.

Much of the prejudice against education in laboring communities can be traced to the unsuccessful careers of many educated sons of uneducated men, born and reared in the community in which they disgraced themselves.

Because of the growing tendency to force education upon all children by legislation, no matter what the sentiment of the particular community may be, it is important that uneducated parents be made to realize the reasons for such failures so that their own children may be prepared to receive an education that will fit them for a useful career instead of a life of idleness.

# Laying Out Development Work in the Anthracite Region

By J. McCrystle\*

**SYNOPSIS**—The work of prospecting, locating the mine opening, laying out the mine and yard tracks, staking out tipples, breakers, etc., is here described, and some useful hints for tunnel driving are given.

In the anthracite region when an unexplored territory is to be developed, surveys are first made locating the dip and strike of the exposed measure; and a map is drawn showing the black dirt laid bare by uprooted trees, the terraces which often indicate the outcrop of coal beds, the streams, roads, timbered areas, the inhabited sections and other objects and natural features that are likely to have a bearing on future operations.

Where more than one coal bed underlies the area, if the identity of one of the measures can be determined, the others may be sought with greater certainty. In the vicinity of Lansford, Penn., egg conglomerate underlies the

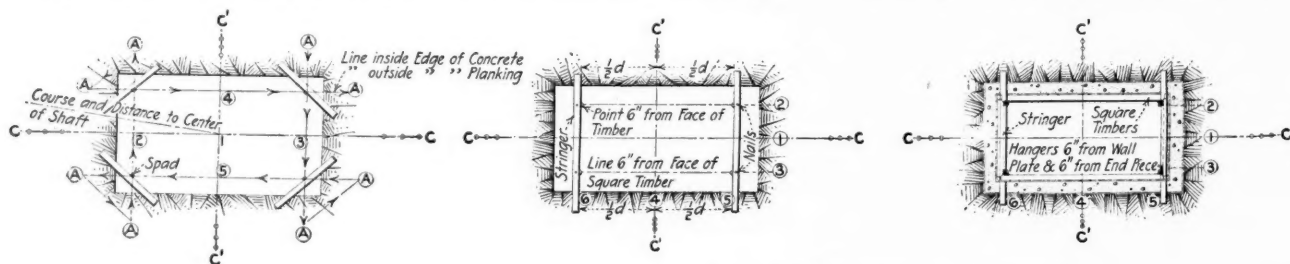
All surveys on these latter are traversed and balanced.

## LOCATING THE MINE OPENING

The location of the mine opening is determined in a general way by the position of the railroad, the height available for dumping into the breaker, the disposal of refuse, the geologic and surface condition (including the location of the mine buildings, tracks, wagon roads, timber yards, reservoir, etc.) and the position of present and future town sites.

A water-level drift and tunnel which entail no hoisting or drainage form the most economical mode of development. Their use, however, is restricted to ravines and hillsides.

Although various types of slopes may be employed, in many instances to advantage, the shaft is today everywhere supplanting other forms of hoisting. The shaft may be carried to great depth, its maintenance is less than that of a slope, it is not easily affected by local conditions of



FIGS. 1, 2 AND 3. SHOWING SUCCESSIVE STAGES IN THE STAKING OF A MINE SHAFT

Buck Mountain vein, while pea conglomerate is found in proximity to the Lykens Valley and Mammoth coal beds.

The color of the ash, the thickness of the coal measure and the relative distance from other coal beds, as well as the texture of the coal itself, the partings in the vein, etc., may be used in a general way to identify the seams found. Shafts and drill holes may also be sunk to further ascertain the geologic formation.

Cross-sections not over 1000 ft. apart are now drawn and the adjacent provings projected upon them. The general work of prospecting is continued until sufficient data are secured or the funds allotted for this purpose have been exhausted. During the progress of the above work, the boundaries of the tract are relocated, topographic surveys made and levels carried from the nearest tidewater elevation. Spur tracks from the main-line railroad are also located.

Small-scale maps showing the entire lease, contour improvement maps to the scale of 50 ft. per in. and temporary working maps at a scale of 100 ft. per in. are next drawn. Contours are also drawn of the coal measure which show the probable location of these beds at intervals of from 5 to 25 ft.

The limits of the proposed collieries are now laid out on the small-scale map, and working maps at the 100 ft. scale are made for each colliery and coordinated.

\*Division engineer, Lehigh Coal & Navigation Co., Lansford, Penn.

either strata or surface, and if properly constructed its output is great.

As soon as the nature and location of the mine opening have been determined a preliminary plan of mine tracks is drawn on the improvement map. Turnouts are usually designed to hold 50 empty or loaded cars. The loads feed to the hoist or dump on a 1.6-per cent. grade to within 50 ft. of the shaft, while the balance of the way 2-per cent. is employed. The empties run on a 3-per cent. to the kickback and then on a 1.8-per cent. grade. Standard frogs and switches are employed, the lead being taken at twice the gage times the number of the frog and the radius as twice the gage times the square of the frog number. A No. 5 is the largest frog carried in stock, while a No.  $2\frac{3}{4}$  is the smallest. A 50-ft. radius is the least that experience will allow.

When the paper location has been approved, it is staked out on the ground. Two methods of staking the tracks are in common use: First, to scale all curves and tangents from the map and replace them on the ground—this is the method generally followed. Second, when the opening is some distance from the dump, grade stakes are placed every 50 ft., tangents are selected from them and the intersections established. The distance from the point of intersection to the line of grade is used as the external secant in determining the radius of the curve. In this latter method, the idea rather than the letter of the plan is carried out.

If a shaft is the type of opening approved, the landing at the top is frequently elevated, the rock from the development being employed in grading the tracks and yards. The piers for the permanent headframe, etc., are, however, first built a few feet above the proposed surface.

In the staking out of piers, engine houses, buildings, etc., the corners are roughly staked out for the excavation and grade stakes are placed a few feet distant for the building lines. When anchor bolts for engines, steel work, etc., are to be hung, an additional center line and cross line are given for setting the template.

The accompanying illustration, Fig. 1, shows the method of staking out rectangular shafts. The point 1 in the center being located, the center lines  $CC$  and  $C'C'$  are placed where they may be extended at any time and will not be disturbed. The setup points 1, 2, 3, 4 and 5 in Fig. 1 are to be used merely for the original staking and are on the line of the inside edge of the concrete. The planking behind the square timber is used as the inside edge of the concrete form.

In Fig. 2 if the original staking has not been disturbed, the stringers, which are usually of 8-in. to 12-in. round timbers, are measured from this staking so as to bring the inner face of the stringer 6 in. inside of the inside face of the square timber. It is frequently necessary to notch the stringer or spike a "scab" onto it in order to bring it to the proper alignment.

When hard rock is encountered the sinking is stopped and the shaft is timbered to the surface. The set of spads on the stringers is used until the timber is only a few feet below them. The operation for Fig. 2 is then repeated, and permanent hangers are placed in the corners instead of spads (see Fig. 3). Plumb bobs are hung from these hangers, and others are placed below them, this continuing until the shaft is complete.

#### ALIGNMENT OF SLOPES

In aligning slopes a notch is cut in one of the mudsills on the line. A nail is driven in it and allowed to protrude about  $\frac{1}{8}$  in. Two spads are then placed in collars a few sets below the notch in the mudsill and lines given as often as requested. In using these lines one end of a cord is looped over the protruding nail and the other end fastened a short distance below the set to be erected, so that the cord will just touch the bobs suspended from the spads.

In staking out breakers the center lines of the sidings and breaker are first located and heavy plugs driven flush with the ground on the center line of the various rows of piers. The sum of the distances between the piers is then checked against the total measurement. A transit is then set up upon the center line of each row and heavy plugs put in at right angles at intervals where they can be easily referred to and where they will probably not be disturbed. The cross base-line is then located, and heavy plugs are put opposite each longitudinal row of piers. The transit is then set on these plugs, and heavy plugs are placed at intervals as was the case with the cross-line. As the center lines of the pier boxes are usually saw-marked they are easily brought in line with the longitudinal and cross-lines.

Levels are then run over all the center-line plugs and level boards placed for the height of the pier as desired. The elevation on top of the form is checked before the concrete is poured, and again after it has

set. All subsequent work is based on the original center line. For convenience the staking is marked off for easy reference on a print of the ground plan.

#### SHAFT LANDINGS ARE 17 FT. HIGH AND TAPERED

In turning landings off a shaft the distance is given to the top. This is 17 ft. above the wall plate at the landing. This distance gives ample room for taking long timber and rails off the cage and permits the testing of the cages readily. A set of bearers is placed sufficiently above the opening to be secure, and the timber between the bearer to the top of the opening is hung.

The next set of bearers is placed two sets below the landing. This set consists of one bearer under each end piece and a longitudinal bearer under each wall plate. The shaft is sunk sufficiently below the landing to prevent the blasting from affecting it. No timber is erected opposite the proposed opening until the landings have been turned 30 ft. Punch props the full

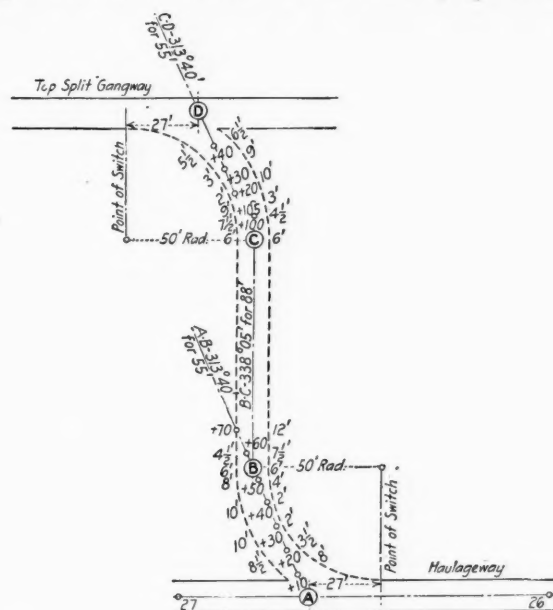


FIG. 4. PROPOSED LAYOUT OF A CURVE IN A TUNNEL

height of the opening are then erected under the end pieces, as well as buntons for fastening the guides.

The top of the opening to the shaft is tapered 30 deg., so as to have the regular 8-ft. tunnel height at 15 ft. from the shaft. In most cases the alignment for 300 ft. of tunnel on each side of the shaft is given by right-angling from the shaft timber. This allows a sufficient length of tunnel to place plugs.

At the landings on the shaft, as distinguished from the one at the bottom, the loaded cars do not feed directly into the shaft, but to a transfer beyond the end of the shaft, on which they are then taken to the desired compartment. The chances of a trip running down the shaft are thus eliminated.

The difference in elevation necessitated by the grades to and from the shaft or slope is overcome either by a car hoist on the empty track or, if possible, by the motor. The pitch of the car hoist is usually made 4 to 5 in. per foot.

#### DRAWBAR PULLS ARE MADE EQUAL

From the ends of the turnouts the main haulageways are driven on a grade of 0.35 per cent. in favor of the



loaded cars. This grade is sufficient to drain the workings and give the same drawbar pull for empty as for loaded trips.

A tracing with the probable contour of each coal bed at the elevation adopted for the level is made, and all proposed panel tunnels, etc., are laid out upon it. The gangways are all driven on a grade to connect the panel tunnels with the haulageway. One of the lower beds the maintenance of which is small and which will not be disturbed by the robbing of the overlying veins is usually selected for the permanent airway and haulageway.

For driving tunnels, three points are given in the roof, and plumb bobs are hung from them and the face aligned by sighting over the strings. The distance between the bobs should be between 2 and 4 ft. where possible. This method requires two men to do the aligning—one at the plumb bob and one at the face. This line is extended whenever requested, but in any case it should be extended when the face has passed the inside bob 100 ft.

Planes through rock are usually aligned in a manner similar to tunnels. A piece of  $\frac{3}{4}$ -in. or 1-in. pipe about 5 ft. long is sometimes suspended from the plumb bobs. This is adjusted so as to give the same pitch on the pipe as is required for the plane. One man at the face and

one at the pipe do the aligning, which gives the grade and line at one sighting. In Fig. 4 is shown a suggested method of aligning tunnels. The lines *AB* and *CD* are each given as the work progresses, the foreman cutting the ribs to agree with the offsets as indicated. When the tunnel has reached the point *B* it is necessary to give instructions for drilling a short distance further without a line before a set-up at *B* can be made. This is necessary at each turn of the tunnel. It frequently happens when the engineers are sent for that a sufficient distance has not been driven to permit giving the next angle point.

In Fig. 4, instead of stopping at the point *B*, the ordinates to the ribs have been given for 15 ft. beyond this point. This gives the foreman time to advance the tunnel three cuts on the proper offset and keeps the transit out of the way of drilling, giving the engineers a short time to arrange for the next alignment.

In remote portions of the mine, where locomotives do not ordinarily operate, curves of smaller radius than mentioned above may be employed, the rails being bent to the curve of a board template. Where coal beds lie close together, the panel tunnels are driven at 1000 ft. intervals, and the various measures, with the exception of the haulageway, may be then robbed.

## A Stoker Installation That Has Proved Economical

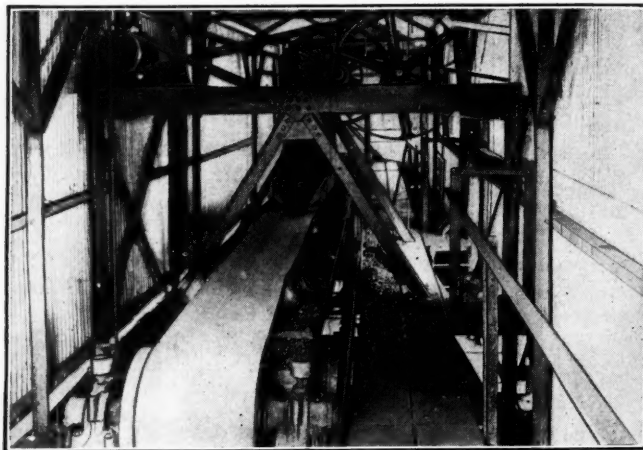
BY W. N. COLE\*

*SYNOPSIS—At an Illinois mine where washed slack had been employed as fuel the installation of stokers which successfully burned raw screenings resulted in a saving of more than \$5000 per year.*

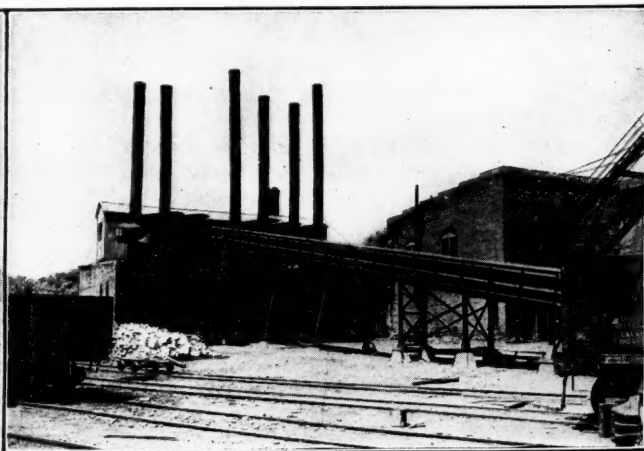
The boiler plant of a certain mine in northern Illinois consists of six 66-in. by 16-ft. return-tubular boilers rated

with respect to four mines. This movement carried a switching charge both ways and with the cost of washing added 83c. a ton to the cost of the raw screenings at the mine before shipment. The question arose as to whether the raw screenings could not be used for fuel in place of the more expensive washed coal.

I made several tests to ascertain the efficiency of the boilers with the fuel we were using and also a test as



CONVEYORS OVER BUNKERS



BOILER HOUSE AND BELT CONVEYOR

at 100 hp. each. This consumed on an average 6800 tons of washed screenings a year.

To obtain the washed fuel for this plant the raw screenings are shipped by rail to a washery located centrally

\*Spring Valley, Ill.

to the possibility of using the raw screenings hand-fired. The latter test was carried on for two days in succession. As considerable washed screenings were mixed with the raw fuel on the first day of the test we managed by constant attention to the fires to keep up enough steam to



enable us to run; but on the second day the washed screenings had been entirely worked out, and we found it impossible to raise the steam to a working pressure, so I had to place three of the boilers on the better fuel in order to keep the plant running.

I then submitted the results of my tests and a sample of each of the coals to the Underfeed Stoker Co. of America for figures and estimates.

The results of my tests for efficiency showed an evaporation of 6.02 lb. of water per pound of coal from and at 212 deg. F. with washed screenings. The stoker company guaranteed an evaporation of 7.28 lb. of water per pound of coal with the same coal or an evaporation of 5.48 lb. of water per pound of coal using the raw screenings. In other words, it would take 1.1 times as much raw screenings stoker-fired as washed screenings hand-fired, or on a yearly basis of 6800 tons of washed screenings it would mean a consumption of 7480 tons of raw screenings; but as there was a difference of 83c. a ton in favor of the raw screenings the use of the latter would mean a saving of \$5028 a year in our coal bill.

The proposition looked so good that the company decided to make the installation, and orders were given to that effect.

In connection with the stokers, we installed in the boiler room a 100-ton Ferro-Inclave coal bunker made by the Brown Hoisting Machinery Co. with spouts to each stoker; a 14-in. Robbins belt conveyor, 172 ft. c. to c., from the screenings chute to the center of the bunker, and a 14-in., 30-ft. cross-conveyor from the discharge point of the main conveyor running across the top of the bunker, thus enabling us to fill the bunker at any point necessary. A practically automatic feed of the fuel from the tipple to the bunker and from thence to the stokers and boilers was thus secured.

This installation has been in operation for about a year and a half and has proved entirely successful. Our records for the first 12 months succeeding the installation of the stokers show a consumption of 7031 tons of fuel, making a saving of \$5431.48, and as the cost of the entire installation was less than \$15,000 it will pay for itself in less than three years.

## Some Views of the Layland Rescue Work

*SYNOPSIS—The head of the State Department of Mines of West Virginia declares that no Federal apparatus-men should receive medals for the Layland rescue work. An editorial published by a local newspaper is quoted to show how sentiment in Fayette County is directed.*

The following remarks by Earl A. Henry, the head of the Department of Mines of West Virginia, will be of interest to readers:

"I arrived at the Layland mine on the evening of Mar. 2, the day of the explosion, and was on the ground from that time until all the bodies, both dead and alive, were removed from the mine. The rescue work was in charge of H. M. Bertolet, the general superintendent, and the State Mine Department, ably assisted by Oscar Knerr and John Clapperton, superintendents under Mr. Bertolet, also several hundred volunteers from the different mines in the New River coal field.

"While Secretary Lane and George S. Rice, through the press, give great credit to the helmetmen connected with the Bureau of Mines, they would be unable to convince the mining people of any heroic work accomplished by them at the Layland disaster. The statement has been made in an interview that the helmetmen worked in advance of the state mine inspectors and others; that their work consisted of constructing brattices and arranging the ventilation in the dangerous sections of the mine, making it possible for the parties engaged in the rescue work to proceed without any danger whatever. If the helmetmen constructed any brattices or did anything to assist in arranging a system of ventilation, it is unknown to any person who was on the ground.\*

\*In our issue of Mar. 20, p. 508, George S. Rice, chief mining engineer of the Bureau of Mines, states in effect that the oxygen-apparatus men "explored in advance of the rescue men, who, being without apparatus, were engaged in bratticing and the recovery of bodies."—EDITOR.

"There were no extremely dangerous conditions encountered in the rescue work, as the mine did not liberate explosive gas and there was no evidence of great force in any section of the mine, there being only a few light slate falls to travel over. The greatest difficulty was the afterdamp resulting from the explosion.

"I have no desire to do or say anything that might detract from or take away any honors due to the helmetmen. I believe that credit should be given to those to whom credit is due, and I desire to go on record by saying that no more heroic men could be found on God's earth than those who volunteered their services and assisted in the rescue work at the Layland mine. These men were mine superintendents, mine foremen, firebosses, miners and mine laborers from the different mines in the New River field. They hurried to the scene and entered into this work of their own free will and did not expect to be rewarded with medals of honor for anything they might do in an effort to remove the dead, or to rescue the living, if any might be found entombed in the mine. Their only motive was one of humanity, and they were in no way seeking honors.

"As to the helmetmen rescuing a number of live persons—this is a misstatement of facts. At midnight on Friday, Mar. 5, all the rescue workers were called from the mine and the fan was stopped so that arrangements could be made on Saturday morning to reverse the air current. About 8 a.m. of the latter day five Italians walked out of the mine with open lights, making the statement that on the morning of the explosion they had inclosed themselves behind a brattice at the head of 9th left entry off No. 3 main haulage road, approximately a mile and a quarter from the entrance of the mine.

"These men had each day tried to make their way out, but could not do so by reason of the afterdamp; but after the fan had been stopped and the air current had ceased for about seven hours these men were able to travel to the

outside, at which time they reported that 42 men were bratticed off in the 10th left heading off No. 3 main haulage road, a distance of 500 ft. farther in the mine than the 9th left heading. The 9th and 10th left headings were the regular working places of these men and were in no way affected by the explosion except by the cutting off of the ventilation.

"The question that is raised by the mining people in this state is, Why should the use of helmets be necessary to rescue the entombed men when they were able to use an open light all the time they were entrapped in the mine and when rescued were able to travel to the outside without the use of helmets?"

"In conclusion I desire to say that the Department of Mines of West Virginia is willing to cooperate and assist the Bureau of Mines in all its efforts to determine the cause of these disastrous explosions and will cheerfully adopt any recommendations that will prevent any other disastrous catastrophe in this state, but I do not believe that mine explosions can be prevented by long-winded statements given out to the newspapers booming the work of any person along this line."

The report of the coroner's jury contains no matters of interest, the statement being that the five men whose deaths were investigated "came to their death by a dust explosion caused by a blownout shot in the third left of the main tunnel heading in No. 3 mine of the New River & Pocahontas Consolidated Coal Co., located at Layland, county of Lafayette, State of West Virginia, on Tuesday, Mar. 2, 1915."

The *Fayette Tribune and Free Press*, of Fayetteville, W. Va., on Thursday, Mar. 18, 1915, under the heading, "Pricking a Bubble," said:

"It is learned from newspaper reports emanating from Washington that the 'expert' rescuers sent by the Federal Government to Layland are to be decorated with gold medals in commemoration of their brave services in rescuing 47 men alive from the mines. And not only are they to have these mute testimonials of their rare courage, but the Secretary of the Interior, Mr. Lane, treats them to a tribute such as would make modesty shrink. Here is the item that is going the rounds:

"Tribute to the Bureau of Mines' rescuers for saving 47 men from death in the mine at Layland, W. Va., was paid by Secretary Lane, of the Interior Department, in a statement issued this week. 'Out of the gloom of such a catastrophe,' said Secretary Lane, 'involving, as it appeared from the earlier dispatches, more than one hundred lives, the saving of 47 men comes almost as a benediction. I am proud of the brave fellows from the Bureau of Mines who have been working heroically for several days to bring about this consummation. I am equally proud of their associates who have been trained in the modern rescue methods by our men. For years it has been demonstrated that the old methods of rescue work not only did not save lives, but even cost the lives of many brave volunteers.

"The oxygen helmets worn by the trained rescuers, which permitted them to penetrate parts of the mine filled with poisonous gases where no other human being could go, are undoubtedly responsible for the saving of the miners. The bureau's men, always in advance of the volunteers, restored the ventilation in the mine, thus permitting the volunteers to advance. Presumably the entombed men had protected themselves from the deadly gases by the erection of temporary doors. Then the way out of the mine was comparatively easy, for it had been restored to normal conditions as the rescuers proceeded.

"I have wired to the rescuers," said Secretary Lane, "my heartfelt appreciation of their heroic efforts in saving these lives. I am also told that the American Mine Safety Association has already started a movement to award to each rescuer one of its gold medals."

"From unbiased, unprejudiced sources the *Tribune*

learns that not only are the federal rescuers not entitled to so lavish a testimonial, but are entitled to none at all. Instead of being of service in this time of great distress, they were an almost intolerable nuisance, for they could not be induced at any time to penetrate the mines beyond where the local rescuers were working, despite the fact that they were equipped with oxygen helmets and other paraphernalia intended to increase their efficiency in this kind of work.

"Such credit as is due for heroism in the rescue work at Layland, and much is due, should go to the volunteers and not to the trained rescuers of whom Secretary Lane speaks. They were there with the real article of courage and almost foolhardy zeal in their efforts to clear up the mine and rescue survivors, if such there should be.

"The State Department, headed by Mr. Henry, assisted by Inspectors Holliday, Absalom, Murray, Blenkinsopp, Lambert and Cobb, working without safety appliances and unaccompanied by canary birds to give them warning of foul air, were the real heroes of the week of horror at Layland. There were dozens of others too that might be mentioned who went about the work with a seriousness born of courage.

"These were thinking of the distress and discomfort of the mourning ones about the mine mouth. The others were taking up their time telegraphing reports to headquarters and informing the newspapers of their heroic handiwork. Secretary Lane has been imposed upon."

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## The Largest Electric Mine Locomotive in the World

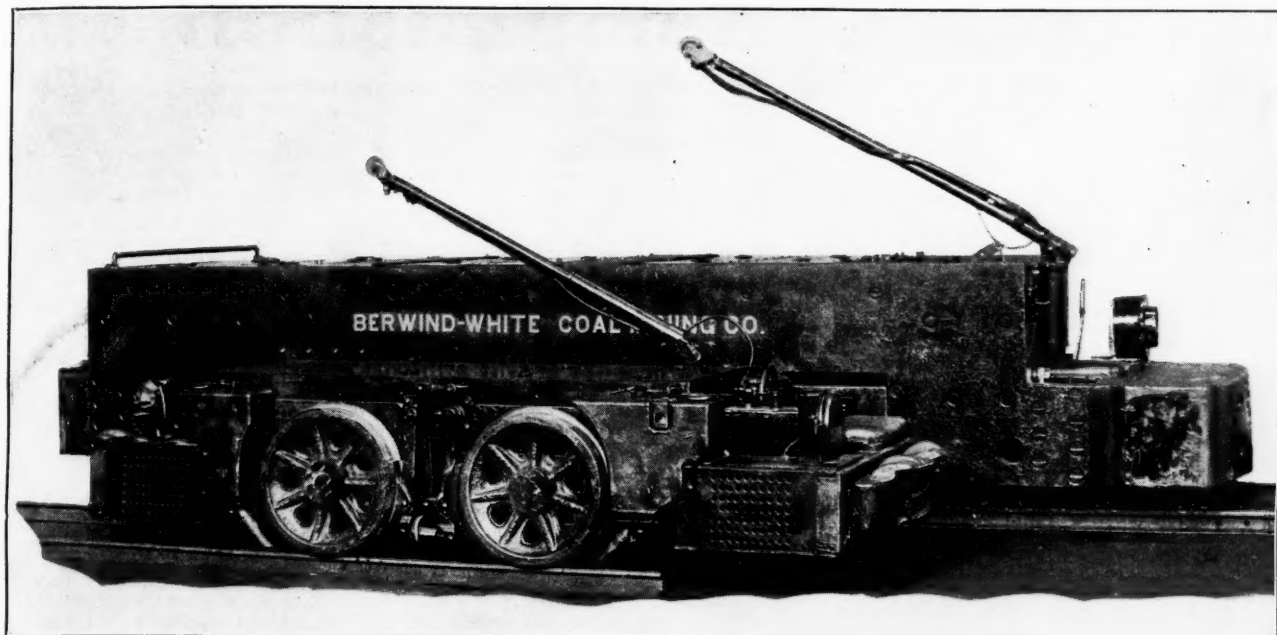
It is the endeavor of every mine operator to secure a maximum output with a minimum cost. In order to successfully execute this plan, the haulage apparatus must operate at a high percentage of efficiency. Where conditions will permit, electric locomotives are displacing all other methods of mine transportation and are giving uniformly satisfactory results.

To keep up with the demand of the times for increased production, the Berwind-White Coal Mining Co. recently placed in operation at Windber, Penn., the two largest and most powerful single-unit electric mine locomotives in the world. These machines weigh 30 tons each, and are of the three-motor, six-wheel type, with equalizing levers to evenly distribute the weight upon the drivers. The side and end frames are constructed of what is known as "armor plate," solid rolled steel slabs, the sides being 5-in. thick, 40 in. high and 17 ft. long.

These members by the aid of angles of heavy steel casting are securely bolted together, forming a rigid unit.

The motor equipment of each locomotive consists of three 115-hp., 500-volt ball-bearing motors, capable of developing a tractive effort of 15,500 lb. at a speed of 8 miles per hour. Incorporated in the design of these motors are the essential mechanical and electrical features which have, to a large extent, solved the troubles encountered in mining work. The application of ball bearings permits the use of gearing of 5½-in. face, and a commutator 5½ in. wide, within the space available on a 36-in. track gage, without a sacrifice in size of any other part.

The use of ball bearings eliminates to a large extent the motor troubles arising directly and indirectly from the wearing down of armature supports of the ordinary type.



COMPARATIVE SIZE OF 6-TON AND 30-TON LOCOMOTIVES

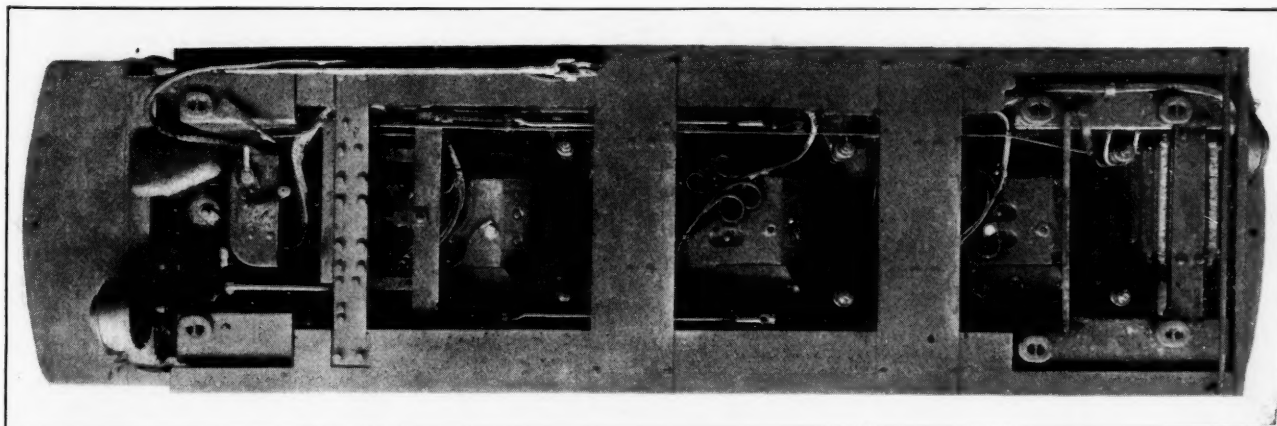
Large commutator doors give ample access to the brushes and commutator for inspection and cleaning.

The armature field frames are supported from the bottom half, so that the top may be removed, thus permitting the removal of the armature without disturbing any other part. Three-point suspension on a spring-hung cross-bar gives flexibility and absorbs shock.

The controller is of exceptionally large current-carrying capacity, with a double set of brushes on the operating cylinder, which are used to cut out the steps of the rheostat when bringing the locomotive up to speed. The two sets of brushes are each provided with a magnetic blowout coil.

On each end of the locomotive is mounted a powerful arc headlight, which is the most efficient method of lighting for work of this nature. The four cast-iron sand boxes have a total capacity of approximately 9 bu., this amount being necessary for the successful operation on the long hauls and heavy grades over which these locomotives run.

The journal boxes are of the latest type, with a hardened steel plate in the lid for taking up the thrust of the wheels transmitted to it through the hardened steel pin in the end of the axle. This eliminates the wear on the wheel hubs and the face of the journal box incident to the end thrust.



TOP VIEW OF LOCOMOTIVE, SHOWING INTERIOR

Among the electrical features is an automatic contactor connected in series with and operated by the controller cylinder. The contactor is designed to break circuits carrying heavy current and its use eliminates the heavy arcing in the controller case sometimes encountered where the main break is incorporated within the operating cylinder. The rheostat is of the cast-grid type of the latest design and of sufficient capacity for operating without excessive heating.

The wheels are of rolled steel, 33 in. in diameter, pressed and keyed onto a 5½-in. axle. Wheels of this type have been adopted as standard by the manufacturer.

These machines were built by the Jeffrey Manufacturing Co., of Columbus, Ohio.

**Right to Terminate Coal Lease**—If a contract for the privilege of mining coal on the royalty basis does not fix any duration of the lease, it is terminable at the will of either party. (Alabama Supreme Court, *Christian vs. Stith Coal Co.*, 66 "Southern Reporter," 641.)



# The Labor Situation

**SYNOPSIS**—A settlement is anticipated in the Coshocton district of Ohio. Cabin Creek miners, and those at Blakely mines, W. Va., present grievances. The coming contract in the anthracite region arouses interest. The monthly employees in that district receive a favorable decision.

There has been no change in eastern Ohio, though the miners have now been on strike over a year. A few tons are being produced in small mines, but there is no hope of a general settlement. Both sides are awaiting the passage or rejection of the Gallagher amendment to the Green Antiscreen bill, now pending before the House of Representatives.

In Belmont County it is stated that the strikers are leasing farms, but most of the miners do not understand the business. Charles J. Albasin, the president of the subdistrict in which the strike is in progress, No. 5, has issued to the press a long, poorly worded notice alleging that the Ohio operators have been keeping up the Ohio railroad rates so as to make more money out of their West Virginia mines. Probably a truer statement would be that the high Ohio railroad and wage rates drove them to purchase the properties in West Virginia.

It has been persistently reported, and never denied, that the strike leaders proposed that the rate be made 47c. instead of 44.61c., agreeing to make up the difference between the two rates by modifications of the dead-work and yardage scales. Thus the strikers would be able to claim a victory and to declare that they had kept their word to the other operators in Ohio. One leading eastern Ohio operator has said that if the mine owners of that district had the Hocking Valley conditions, they would regard 49c. a ton as a figure from which a profit could be obtained.

The miners on strike desire to farm the coal companies' properties and much resent the fact that these lands are to be used as pasturage for the idle mules. They are making extensive application for government seed.

At the joint conference of representatives from operators and miners in the Coshocton district in Ohio, which started Apr. 5, at 2 p.m., and continued the following day, prospects for the settlement of the wage controversy, which has continued for more than a year, appeared brighter than for some months. Reports from the conferences declared that both sides showed a more conciliatory attitude. The wage agreement in this district was practically settled at one time, but in a referendum vote the miners failed to approve its provisions.

## West Virginia Troubles

The Cabin Creek coal miners of West Virginia are declaring that they should receive the check-off and outside day-wage scale, as secured by the Kanawha River miners. They claim that they are entitled to these under the 1913 contract. A committee of seven has been appointed to wait on the operators. The latter, it is stated, declare the contract to have a different meaning.

Apparently the referendum in the New River and Wind-ing Gulf sections of Fayette and Raleigh Counties of West Virginia has ratified the agreement recently prepared between miners and operators. At the Blakely mines of the Blue Creek Coal & Coke Co., in the same state, which had about 300 employees in 1913, the miners are said to have been required to throw the bug-dust from the electric machines into the gob. This they refused to do, as thereby they would have to handle it without compensation.

A convention will be held on Apr. 12 by the members of District 17 of the United Mine Workers of America to elect a vice-president in place of John Cunningham, whose election was set aside by the executive board last autumn. The entire set of officers may be voted upon again. This action grew out of a contest instituted by C. G. Griffith, the defeated candidate for vice-president, who claimed that there had been extensive frauds in the Winifrede district and elsewhere, resulting in his defeat and the election of Cunningham. Cunningham did not contest the matter, and the decision of the board was unanimous.

The 134 men arrested in connection with the riot and with the death of Constable W. R. Riggs during a strike of the men at the Jamison Coal & Coke Co.'s works near Farmington, W. Va., on Feb. 20, will be tried on Apr. 6 before Judge W. S. Haymond.

## Quiet in Colorado

In Colorado conditions are quiet. The coal commission has reported to President Wilson that 71 of the mine operators, producing 61 per cent. of all the coal mined in the state, have expressed the opinion that no useful purpose would be served by the commission going to Colorado at this time. The same opinion, it is said, is shared in labor circles.

At the mines of the Harrison Coal Co., Streator, Ill., the men have struck for higher pay and the right to fire shots twice in each shift instead of once as at present. They claim that there is too much material to be handled. The mine employed about 105 men in 1913.

## Conflicting Statements about Kentucky

W. S. Wells, the general manager of the Middle Creek Coal Co., writes us among other matters:

In your article you state that this company employs only 40 men, when in fact we have between 125 and 150 working for us. You further stated that we have resumed irregular operation at the old scale, which is entirely false, as we have started at three days per week at the new scale—a reduction of 15 per cent. on everybody from the general manager down, excluding trappers. The cut is merely temporary, and the old rates will be put back into effect on May 1, if conditions permit.

Your article seems to cast reflection upon our action, and we cannot see wherein it is of importance to you. Therefore, we shall demand that you immediately publish the facts in this case, giving reasons for your recent misinformation.

We had the story, at least, almost correct in the first instance, when a correspondent, who is a leading coal man in the State of Kentucky, wrote us that we had overstated the importance of the Middle Creek Coal Co. It is, we believe, just as we said, the largest concern in Floyd County. We avoided stating how many men were employed, because our record was back in 1913. It was only after we were told what we believed was the truth that we made the correction. We leave it to Mr. Wells to remove any misunderstanding, and merely quote his statement. We cannot, however, admit that we believe it is good policy to reduce wages.

## Next Year's Scale in Anthracite Region

The celebration in the anthracite region of Pennsylvania of the establishment of the 8-hr. day in bituminous mines served John P. White and others with an opportunity to express the intentions of the miners relative to the coming scale to be signed in that region in 1916. Apparently the 8-hr. day is the leading issue, but an increased wage of 5 per cent. for inside employees and 10 per cent. for outside workmen is also sought, and it is desired that the check-off be made a part of the contract.

The miners take hope from the unity of the organization. They desire a full 100 per cent. membership when the strike commences. The unions in the anthracite region embrace so large a proportion of the men that there is no fear as to the outcome of a strike. J. P. White, the president, however, does not appear so sure of the outcome. To him membership is not so important as funds; and though membership, time and peace will assure the necessary capital to sustain a strike, the time is now too short to accumulate the funds, and there is no peace, for 15,300 men are on strike. Unless the times improve, it is likely that the 8-hr. day will alone survive the progress of time.

## A Welcome Decision for Anthracite Mine Workers

Judge George Gray, of Wilkes-Barre, Penn., gave two decisions this week in favor of the men. It was decided that the Delaware, Lackawanna & Western R.R. coal department and the Price-Pancoast Coal Co. must pay their men a 10-per cent. increase over the schedule in force on May 30, 1912.

After the agreement operative on that date certain monthly men, such as watchmen, electricians, helpers and barn-bosses, were denied the 10 per cent. increase, the companies contending that these men relinquished their rights by accepting a stipulated salary at increased pay after the agreement of Apr. 1, 1903. This decision is retroactive and applies to all the companies in the anthracite region. It will compel the disbursement of a large sum of money, the ruling retro-acting for nearly three years. The Price-Pancoast Coal Co. did, however, give an increase in no case less than 5½ per cent. to its monthly men.

There is much dissatisfaction throughout the anthracite region with the status of the compensation bill. It is alleged that Senator W. M. Lynch, who is chairman of the Mines and Mining Committee of the state, is opposing the reporting of the Catlin Bill, without the passage of which, it is stated, the miners cannot obtain compensation.

# The Discussion of Mining Laws and Needed Legislation Summarized

BY J. T. BEARD

*SYNOPSIS—Following is an altogether too brief summary of the leading points and arguments presented in one of the most valuable discussions that have thus far been conducted in COAL AGE. These suggestions merit close study and careful consideration, as they are all the outgrowth of experience in the practice of coal mining.*

Probably no discussion that has been conducted in COAL AGE has attracted wider attention or excited deeper interest among all classes of coal-mining men than the discussion of the manifold features of the present mining laws of the different states. Certainly none has proved more valuable in the results it may be expected to accomplish.

The criticisms offered and the suggestions made come from practical mining men whose experiences have revealed to them the weak points in existing laws and led them to suggest measures that would insure greater safety in mining. In the following review, I will attempt to group these references under common heads and to emphasize those points that have received the widest attention at the hands of contributors.

## THE NEED OF CLEAR AND SPECIFIC TERMS IN MINING LAW

Letters Nos. 7, 8, 19, 20, 31, 32 and 37 have drawn attention to the fact that the wording of the mining laws, in many cases, leaves much to be assumed. The wording is often *ambiguous* and capable of different interpretations by different persons. More often it is *contradictory* or, to say the least, *inconsistent* in itself, instances of which have been pointed out in the letters referred to above. The fact of the matter is that most of our mining laws are patchwork; they do not show the steady growth and development from a single root base. Too often the terms used need to be specially defined or the language requires to be interpreted in order to understand the intention of the law.

## RESPONSIBILITY FOR ACCIDENT

The lack of clear definition and logical development in mining law is one of the greatest obstacles in the fixing of the *responsibility for accident* or for a violation of the law where it belongs. Attention has been drawn to this fact in numerous letters, Nos. 8, 12, 13, 17, 25, 33, 35, 37, 40 and 44. The truth of this condition is shown in the following numerous references.

## THE ANOMALOUS POSITION OF THE MINE FOREMAN

Reference has been made to this feature in Letters Nos. 25, 30, 32, 35 and 43, in which it has been shown that the mine foreman is, so to speak, a "bumping block" between the mine inspector and his company. In Letter No. 22, it was shown that the mine foreman is usually given *too much territory* to supervise, which makes it impossible for him to comply honestly with the

requirements of the law. This condition led to the suggestion that a *sworn statement* should be required by the inspector of every foreman and assistant foreman as to the actual condition of the mine in the interval between the inspectors' visits.

## THE MINE FOREMAN A STATE OFFICER

It was even suggested in Letters Nos. 30, 35 and 40 that, owing to the conflicting duties of his position, the mine foreman might properly be *employed by the state* and act under the direction of the mine inspector of the district. This suggestion, however, was strongly opposed by the writer of Letter No. 35, who argued that this would practically place the mine foreman beyond the control of the company of whose mine he has the charge.

To obviate the loss of his position because of a faithful compliance with a requirement of the mining law objectionable to his company, it was suggested (Letter No. 30) that the removal of a mine foreman from office should only take place after a fair trial before an executive board. But this, it was stated (Letter No. 35), might be an injustice to the company, which would at times be compelled to operate at a loss, if at all.

## CLASSIFICATION OF MINES

The need of a proper *classification* of mines, in mining law, was referred to in Letters Nos. 7, 14 and 24; and it was suggested in the last-named letter that a similar classification should apply to *all* legislation relating to safety in mining. It was shown that, owing to the lack of such a classification on a practical basis, it frequently happens that neighboring mines are brought into *unequal competition* with each other because of different methods being employed for evading those requirements of the law that would bring the mine under the particular classification of a "gaseous mine." Instances were given of such dishonest evasions of the law whereby the mine inspector was hoodwinked and deceived.

Attention was drawn in Letter No. 41 to the fact that, owing to peculiar roof conditions that required special methods of timbering, mines generating no gas are often more dangerous than others generating gas. But notwithstanding this fact, the more dangerous mine is classified as nongaseous and therefore subject to fewer restrictions and less expense, while its operation is accompanied with greater possible fatality than the mine generating gas. Similar *unnecessary burdens* imposed by law in coal mining were referred to in Letters Nos. 8, 14, 19 and 42.

Letter No. 9 draws attention to the importance of specifying in mining law the particular method to be adopted in the *removal of accumulations of gas* in mine workings, in respect to the withdrawal of all men working on the return current of the affected section of the mine and permitting no persons to enter the mine except those actually engaged in the work of removing the gas until after the mine has been again examined and

pronounced safe for work. It is further urged that the law should forbid the *dangerous practice* of "brushing" out the gas, making it compulsory to remove all gas by the ventilating current and using only safety lamps while so doing.

#### THE USE OF NAKED AND MIXED LIGHTS

Attention is drawn to this important matter in Letters Nos. 34, 37 and 38, and the two last named letters refer to the danger of the provision made in Sec. 2, Art. 28, of the Pennsylvania bituminous mine law (1911), which apparently annuls the requirements of previous sections of the same law in respect to the use of safety lamps. The section here referred to states that the provisions of the act relating to the use of safety lamps "shall not apply to any mine wherein explosive gas is being generated only in live entries."

It has seemingly been overlooked that the gas generated in the "live entries" would circulate through the rooms and other workings where it is permitted to use open lights. Perhaps no feature of coal mining is attended with so great a risk as the permitted *use of open lights* in any portion of a mine requiring the use of safety lamps in other portions. Letter No. 26 suggests that state mining laws should compel the introduction of *safety lamps* in every mine where it is known that quantities of firedamp are generated.

#### WORKING MINES IN OIL AND GAS FIELDS

Letters Nos. 23 and 35 draw attention to the great danger encountered when operating a coal mine in *oil and gas fields*. In this respect probably the new law of Ohio furnishes the fullest protection from accident due to this cause. The provisions of the Ohio law in this regard are fully given in Letter No. 35. This is certainly a very important matter and should receive careful consideration in all mine legislation.

#### APPROACHING ABANDONED WORKINGS

The need of using special precaution when driving toward abandoned workings that may contain either gas or water is mentioned in Letters Nos. 8 and 19. It is recommended that *advance boreholes* should be maintained in the face of all headings or other workings that are being driven toward abandoned places. In addition, it may be stated that flank holes should be bored at an angle, every 8 or 10 yd., in the ribs of all such headings, which should be driven single. Plugs should be kept ready for instant use to stop the holes in case water is tapped. Only safety lamps should be used, and a close watch must be kept for the first appearance of water or gas in the seam.

#### MINING METHODS AND EQUIPMENT

A good suggestion is made in Letter No. 32 in respect to making an *effort to standardize*, as far as practicable, certain general mining requirements relating to the conducting of the ventilating current, the construction of stoppings and air bridges, the shooting of coal, the timbering of working places, lighting of mines, safeguarding electrical installations, and the foolproofing of mining machines and all mechanical appliances.

The compulsory use of *safety catches* on all cages and trips used for hoisting or lowering men is recommended in Letter No. 9. Letter No. 10 refers to the Avon-

dale, Penn., disaster, which first drew attention to the need of maintaining *two openings* in every mine; likewise, the terrible Cherry, Ill., disaster, which taught the lesson of greater *fire protection* for mines and the need of the fireproofing of mine shafts. It may be added that the Throop, Penn., disaster taught the lesson of a similar fire protection for all underground engine and pump-rooms.

Letter No. 10 also advises legislation prohibiting the use of *gasoline motors* in coal mines. Other recommendations in respect to mine equipment are: The maintenance of *refuge stations* that would be available in time of accident, Letter No. 34; the regulation by law of *mine timbering* and the adoption of some regular system of timbering the working face in every coal mine, Letter No. 26; the adoption of the *electric head lamp* in gaseous mines, Letter No. 9; the regulation and control of the *company-store curse* where such exists; the prohibition of the *sale of liquor* in all mining towns and districts; and the prohibition of the employment of persons who cannot *speak and understand the English language*, Letter No. 38.

#### BLASTING IN COAL MINES

Letters Nos. 9, 13, 15 and 17 draw special attention to the dangers of the all too common practice of "*shooting off the solid*," the *excessive use of powder* in blasting and the *use of dynamite* for breaking down the coal. A closer *examination* of the workings and *inspection and firing of shots* by duly authorized *shotfirers* is recommended, also the exclusive use of *permissible explosives*. These recommendations are certainly worthy of the most careful consideration.

#### THE MORNING EXAMINATION OF A MINE

Letters Nos. 5, 9, 12, 13, 14, 20 and 26 refer to the important matter of regulating by law the time within which the morning examination of a mine should be made by the firebosses. Attention is drawn to the fact that in most cases the fireboss is given *too large a territory* to examine and is therefore unable to cover the ground within a proper time before that for the men to go to work. It is stated in Letter No. 5 that no fireboss can truthfully say that a place is "free from gas" 6 or 8 hr. after making his examination. It is urged in Letter No. 9 that this examination should be made not more than 3 hr. previous to the time set for the workmen to enter the mine.

Letter No. 12 argues for a *higher standard of inspection* of all working places and the most *improved methods of timbering* the roof and coal. It may be added that the work performed in the morning examination before the men are permitted to enter the mine should include the *inspection of the roof, timber and brattices* and other requirements of safety in all working places. Letters Nos. 5 and 20 urge the *limitation* by law of the amount of work required of the fireboss and the employment of a *sufficient number* of men to make this examination thoroughly within the time limit.

#### THE SELECTION OF STATE MINE INSPECTORS

The manner of selection of state mine inspectors, *by appointment* by the governor or *by election* by popular vote, is treated in Letters Nos. 9, 14, 17, 26, 27, 28 and 29. Almost without exception the writers of these letters



argue for a competitive examination to determine the eligibility of candidates for this office. It is worthy of note that not a single writer advocates the elective system of choosing mine inspectors, but the arguments are strongly opposed to this method.

A strong argument is advanced in Letter No. 29 in reference to the *length of tenure of office* of the state mine inspector, and Letter No. 9 argues that the *removal from office* of an inspector should only be effected "for cause." This feature of mine inspection work has often been advocated in COAL AGE.

#### THE DISCRETION OF MINE INSPECTORS

It is remarked in Letters Nos. 10, 14, 32, 37 and 38 that in many mining laws too much is left to the *discretion and judgment* of the mine inspector. While this is undoubtedly a necessity in respect to certain mining conditions that cannot be forecasted in the law, it is too often carried to an extent that makes the mine inspector the lawmaker. This feature possesses the disadvantage that the inspector is liable to an error of judgment and occasional favoritism and unjust discrimination. But, in addition to this, the law thus imposes an unnecessary burden on the inspector in requiring that he shall both make and execute the law.

#### EFFECT OF POLITICAL INFLUENCE

The undue effect of political influence as affecting the *selection and appointment* of men to the position of state mine inspector and the *certification* of mine officials is forcibly treated in Letters Nos. 5, 10, 11, 14, 18, 26, 27, 28 and 29. The two letters last named argue strongly for *civil-service control* in these matters. Instances are cited illustrating the baneful effect of such political influence in securing the appointment of men to positions that they are unfitted, by knowledge or experience, to fill. Letter No. 29 refers to the influence of the United Mine Workers' organization in this respect as particularly harmful under the elective system, owing to the strength of the miners' vote in the inspector's district.

#### THE ENFORCEMENT OF PRESENT MINING LAWS

Much stress is laid on the enforcement of present existing mining laws as being of as great importance as the enactment of new laws, in Letters Nos. 5, 9, 11, 12, 13, 14, 17, 19, 20 and 22. The truth of this argument cannot be denied. The *rigid enforcement* of any law standing on the statute books is absolutely essential to safety in mining. The law should either be enforced or wiped from the record. *A dead law is a menace to safety*, as it invites a similar disregard of other laws.

In this connection it is rightly claimed in Letters Nos. 22 and 38 that the mine inspector frequently has charge of *too large a territory* for the thorough performance of his duties. In order to secure the enforcement of his orders in a mine and to enable him to place the responsibility for any violation on the right shoulders, it is argued in Letters Nos. 25 and 35 that the mine inspector should give *written orders* to the mine foreman and a duplicate to be handed to the mine superintendent, the mine foreman being required to read and sign said order at once, thereby indicating that he understands the same.

#### INTERSTATE MINES

Attention is drawn in Letters Nos. 16 and 24 to an important condition that is quite generally overlooked in mining laws. This relates to the rightful jurisdiction of the mine inspector in those portions of a mine in his charge that extend beyond the border line of his state. The pertinent question has been raised, How can the mine inspector be responsible for the safe operation of such a mine when his jurisdiction is limited by the state line on the surface and underground? This is an important matter that should be treated in all state coal-mining laws, and we hope for its further discussion in COAL AGE.

#### COÖPERATION AND THE "PLAY-SAFE" SPIRIT

Commendable attention is drawn to the need of coöperation on the part of mine officials in assisting the mine inspector to carry out the mining laws as they pertain to the *safety of mine operations*. This feature is mentioned in Letters Nos. 3 and 10, while Letters Nos. 19, 20 and 37 draw forcible attention to the fact that the mines in which the greatest degree of safety is secured are those in which the management manifests a *desire to "play safe."*

Many large companies have shown a praiseworthy desire and purpose, not only to carry out all the requirements of the law, but to go further and enforce such other regulations as are found to be necessary for a safer operation of the mine and the health of the men employed therein. It goes without saying that a still greater manifestation of this spirit on the part of not only mine officials, but all mine workers, would greatly reduce the number of mine fatalities and accidents and increase the health of mine workers.

#### THE WORKMEN'S COMPENSATION ACT

Reference is made to the generally successful operation of coal mines in different states under the Workmen's Compensation Act, which provides for a suitable compensation for loss of time and injuries sustained by mine workers while in the performance of their duties in the mine. Such references appear in Letters Nos. 3, 10, 11, 18, 25 and 38 and argue strongly for the adoption of such a law in all coal-mining states as being an effective means of increasing the degree of safety in mining operations and lowering the cost of coal production by reducing the number of fatal accidents with all their attending expenses.

#### THE EDUCATION AND TECHNICAL TRAINING OF MINING MEN

Letters Nos. 6, 11 and 27 urge the growing need of more technical knowledge combined with experience on the part of *all* mine workers and the recognition of this need in all state mining laws, to the end that suitable provision may be made for the necessary training and instruction of mine workers. While many laws require the examination and certification of certain mine officials, little attention is given to provide the means for such education and training among all classes of employees.

#### CERTIFICATION OF MINE OFFICIALS

Numerous features of the certificate law in many coal-mining states are discussed in Letters Nos. 14, 17,

22, 24, 31, 34, 36, 38, 39 and 41. Letters Nos. 14 and 22 refer to a proper *classification and grading* of these certificates that would insure greater safety. Letters Nos. 17 and 34 urge the need of more *rigid examinations* as a requisite to obtain a certificate of competency. Letter No. 24 draws attention to the different *standards of efficiency* and requirements for certification in the different states, and with Letter No. 38 argues for the *interchange of state certificates*.

Letters Nos. 31 and 36 refer to and illustrate the *inconsistency* of the Pennsylvania anthracite law, requiring that the applicant for a certificate of competency to act as mine foreman shall have had five years' practical experience as a miner. Letter No. 34 advises that all mine officials should be examined at least every five years up to the age of 50 years. Letters No. 38 and 41 urge the need of requiring the *certification of mine superintendents*, as being the mine foreman's superior in office and ordering his work; while Letter No. 39 draws attention to the fact that an *uncertified assistant* mine foreman is frequently compelled to perform the duties of the mine foreman and held responsible by law for any violation of its requirements, while the law does not require his certification. These are all important matters and worthy of careful attention in mine legislation.

#### REQUIREMENTS OF EXAMINATION FOR CERTIFICATES OF COMPETENCY

The kind of examination that should be given to determine a candidate's fitness to hold the office and perform the duties of mine foreman, assistant mine foreman or fireboss is treated in Letters Nos. 14, 17, 24 and 29. These letters urge that the *questions propounded* in examinations should be suited to the class of work to be performed and the duties involved. Letters Nos. 17 and 29 urge that both *practical and theoretical* questions should be given to determine the candidate's knowledge of mining, while Letter No. 24 urges a *uniformity* in state examinations for these positions that would make possible a suitable *interchange* of certificates between states.

#### RIGHTS OF EXAMINING BOARDS

In this connection, Letters Nos. 2, 4, 10, 11 and 21 discuss the *right of examining boards* to withhold the corrected papers and not return the same to the candidate to whom they belong. On the one hand, it is claimed that the return of these papers to the candidate, after they have been properly corrected by the examining board, would enable the candidate to understand better the points in which he failed. On the other hand, it is argued that examining boards are not necessarily instructors and that the return of the papers so marked might do the candidate more harm than good. It was suggested that the return of candidates' papers to them might necessitate much correspondence and explanation, which is avoided by the filing of the papers in the State Department, where they can be seen by the candidates interested.

#### CAPABILITY OF MEMBERS OF EXAMINING BOARDS

The frequent incapability of the members of examining boards is discussed in Letters Nos. 2, 4, 10, 11, 28 and 29. Attention is drawn to the fact that probably

a majority of the mine superintendents appointed on examining boards are *incapable* of passing intelligently on the technical questions asked in examinations; and, further, that the miners appointed on these boards are likewise *incapable*, with few exceptions, of knowing whether or not such questions are correctly answered in candidates' papers. The suggestion is made, Letter No. 2, that such *board members should themselves hold a certificate of competency* obtained in a previous examination. We heartily indorse this suggestion and advise that such a provision be made in all mining laws relating to the examination of mine officials.

#### MINING CAPABILITIES OF LAWMAKERS

Attention is drawn in Letters Nos. 3, 8, 11, 14, 19 and 24 to the fact altogether too well known that it cannot be expected that lawmakers shall be intelligently acquainted with mining operations and requirements. For this reason, it was suggested in Letter No. 3 that it is desirable that mining representatives shall be present on needed occasions to give to legislators the desired information that would enable them to act more intelligently on the passage of mining laws. Objection is taken to this suggestion by the writer of No. 11, who states that such *lobbying* does not tend to generate the best of feeling among the working classes, who are prone to regard such activities as animated by a selfish purpose on the part of controlling interests.

With this summary of views, the discussion of needed mining laws and legislation will close. As stated some time since (COAL AGE, Vol. 6, p. 958), it is expected to print a résumé of the opinions expressed in this discussion and to place the same in the hands of lawmakers in all coal-producing states. Copies will also be sent to the different state mining departments, mine inspectors and leading mine officials. Copies can also be secured by request in writing when these are ready for issue; but such requests should be made at an early date.



### The Price of Anthracite

The brief filed on behalf of the respondents in the Interstate Commerce Commission's investigation of rates, practices, rules and regulations governing the transportation of anthracite coal contains the following statement of the amounts respectively retained by the retailer, the transporter and the producer out of the consumer's payment for a long ton of tidewater coal:

DIVISION OF THE COST OF A TON OF ANTHRACITE				
Size of Coal	Consumer Pays	Retailer	Transporter	Producer
Grate .....	\$7.28	\$2.68	\$1.60	\$3.00
Egg .....	7.28	2.43	1.60	3.25
Stove .....	7.28	2.43	1.60	3.25
Chestnut .....	7.56	2.46	1.60	3.50
Pea .....	5.88	2.33	1.45	2.10
Buckwheat No. 1.....	4.37	1.57	1.30	1.50
Buckwheat No. 2.....	3.53	1.23	1.15	1.15
Buckwheat No. 3.....	3.19	1.39	1.15	0.65

The amounts retained by the retailer, the transporter and the producer represent gross returns and not net profit. Out of them the retailer must pay for the cost of marketing coal and delivering it to his customers, the transporter must pay in large part for the maintenance and operation of his railroad and equipment and for hauling the empty cars back to the mines, and the producer must pay for mining his coal, preparing it for market and also find the wherewithal to meet his taxes and royalties.

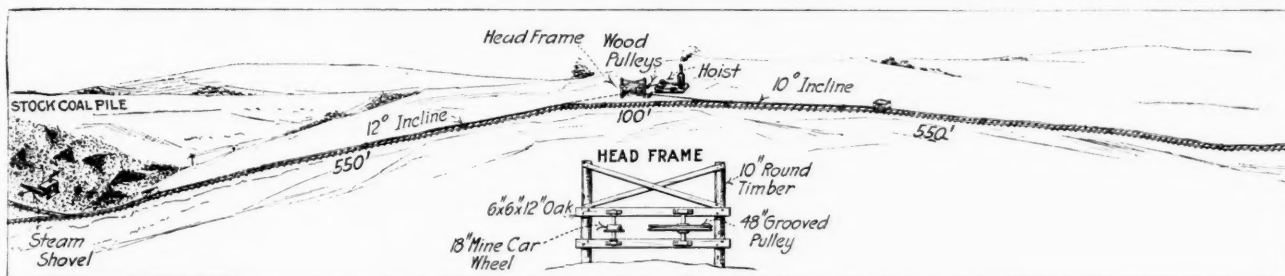
## Getting Coal from Stock-Pile to Breaker

By D. R. LLEWELLYN\*

The accompanying sketch shows the general plan used to reclaim a stock-pile which was dumped on the opposite side of a hill from where the shaft and breaker were located. The colliery in question belonged to the Enterprise Coal Co., and the chief problem was to get the coal to the breaker for preparation. An engine was installed on the top of the hill in such a way that the coal could be hoisted up one side and let down the other, with one

present to stop the pump, inside of 20 min. the bearing would be destroyed and the pump disabled. One pump, therefore, required one man's attention, and even at that we had the pump only four months before the bearing commenced to run hot and disabled the pump for three days.

We then tried the arrangement shown at C. It is very simple, but works like a charm. It consists of an old  $\frac{1}{2}$ -in. angle valve, with a piece of heavy brass wire attached to where the disk was, and the wire extends down through the nipple and about an inch into the column. When the water shows any sign of slowing up, open and



A PRACTICAL PLAN FOR RECOVERING A STOCK COAL PILE

engine and one gang of men; otherwise it would have taken an engine to hoist it up and a double-track plane to let it down. The system here shown requires only a single track on both sides of the hill and a steam shovel to load the coal. A switch and double track are located close to the steam shovel. The size of the engine is 8x12 in., double geared 3 to 1, 34-in. drum; size of the mine car, 119 cu.ft.

## A Simple Plan for Cooling a Pump Bearing

By TIMOTHY A. RYAN†

An interesting experiment was tried at the mine where I am foreman. Some time ago we had a centrifugal pump installed, driven by a 75-hp. motor, at a speed of 1200 r.p.m. Owing to the high speed, the pump is equipped with a water-cooled thrust bearing.

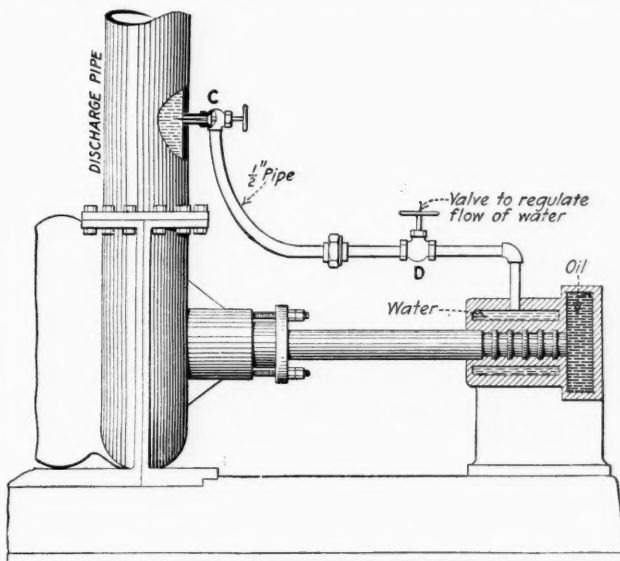
The first question that arose was the supply of water for the bearing. As there was no fresh water around the plant except what was purchased from the city water company—and which would be too expensive to use on the bearing—we decided to use the mine water. We tapped the column for a  $\frac{1}{2}$ -in. pipe and connected it to the bearing, as shown by the sketch. We did not, however, have the angle valve shown at C; we had a  $\frac{1}{2}$ -in. ell in its place.

We first had a screen put on the suction pipe, with a  $\frac{1}{4}$ -in. mesh, but we found it blocked very easily; so we replaced it with a  $\frac{1}{2}$ -in. mesh, which eliminated that trouble.

We next had trouble with the feed pipe leading to the bearing. Every little particle of wood or foreign matter that found its way into the pump would lodge in the  $\frac{1}{2}$ -in. nipple that was tapped into the column, thus stopping the flow of water to the bearing. If no one were

shut this angle valve a few times, thus moving the wire up and down in the nipple. This keeps the nipple clear.

We have had this arrangement on for about eight months, and it has never failed or given any trouble. It does not require the service of a man watching the flow of water and the pump runs for weeks without any atten-



ARRANGEMENT OF THE COOLING-WATER PIPE AND DISCHARGE COLUMN

tion except cleaning and oiling once a week. The drawing here shown is intended to give an idea of the arrangement of the cooling-water pipe and not the details of the pump or bearing.

Since the weight per unit length of any electrical wire varies directly as the cross-sectional area, it follows that the resistance of a wire weighing, for example, 500 lb. per mile will equal one-fifth of the resistance of a wire weighing 100 lb. per mile. This is assuming uniform quality and treatment in manufacture.

\*Outside foreman, Excelsior, Penn.

†Hazleton, Penn.

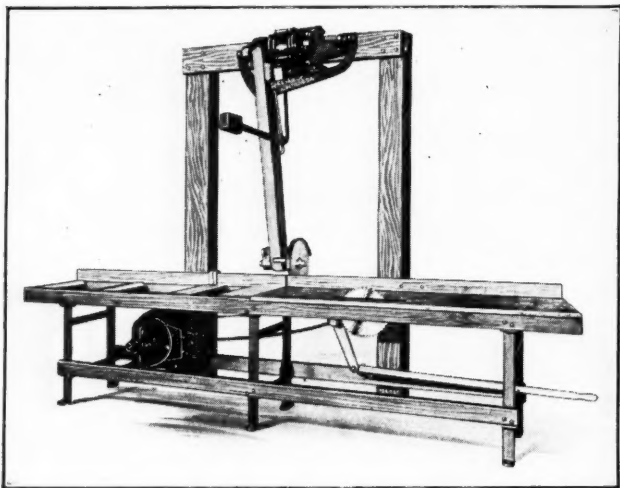


## New Apparatus and Equipment

*Believing that one of the greatest services that a journal such as COAL AGE can render its readers is to acquaint them with new and improved equipment which may be employed directly or indirectly to the benefit of the coal-producing industry, this department is inaugurated. For the present it will appear in the second and fourth issues of each month. We shall therefore be glad to receive from builders, manufacturers or dealers brief descriptions of new or improved pieces of apparatus in which they are interested, the use of which will tend toward better results in or the economic development of the fuel industry or any of its numerous ramifications.*

### Reliance Motor-Driven Saws

The Reliance swing-saw for crosscut work is a self-contained unit, which may readily be installed by fastening with four bolts to any convenient wall or post. It is motor-driven, thus doing away with the loss of power incident to line shafting and belting. An automatic starting-box permits of quick starting and stopping by means of a knife switch placed convenient to the operator. Current is thus consumed only while the saw is in operation. Outfits of this variety are made in several sizes for both



THE CROSSCUT AND RIP-SAWS ATTACHED TO THE SAME FRAME

direct and alternating current and will cut lumber up to 12 in. thick.

A recent addition to the Reliance line of electrically driven saws consists of the above-described swing-saw in combination with a rip-saw. A double-throw switch controls the operation of these saws and assures that only one may be in use at a time.

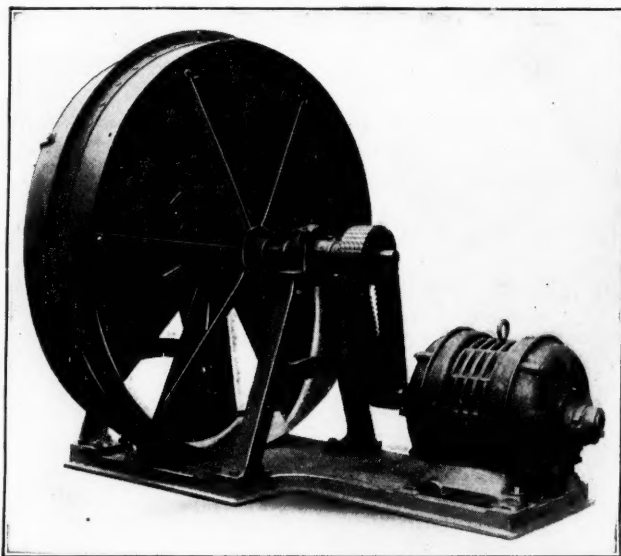
Another attractive feature of this combination is the fact that the two units may be employed independently of each other at different parts of the plant.

Both of these outfits are especially suitable at mines for cutting up and shaping lumber in the manufacture of

cars and the linings of mine shafts. They are manufactured and sold by the Reno-Kaetker Electric Co., of Cincinnati, Ohio.

### A New Two-Speed Fan Unit

In order to secure the benefits and savings inherent to two fan speeds in mine-ventilation work, the J. C. Stine Co., of Tyrone, Penn., has recently placed upon the market the unit shown in the accompanying illustration. The fans are built in sizes ranging from 4 to 8 ft. in diameter, the bedplate being extended to receive the two-speed alternating-current motor. These motors, instead of being connected to the fan by gearing or belt, as has formerly



THE FAN AND MOTOR ON ONE BEDPLATE READY FOR INSTALLATION

been done, are connected by a Morse silent chain, and the fan is supported on Hyatt roller bearings.

This combination forms an exceedingly compact and reliable unit, as well as one which is comparatively inexpensive from every standpoint. Experience has shown that the roller bearing not only requires less power to overcome friction, but that considerably less attention is required in the way of attendance and supervision generally.

The silent chain drive possesses many advantages over gears or belts. It is compact, silent, powerful, reliable and is not affected by moisture or mine gases. It is consequently highly efficient so far as power transmission is concerned, and—what is more important from the mining standpoint—thoroughly reliable.

The savings which may be effected through running the fan at high speed during the daytime or working hours and at half speed during the balance of the day are greater than is usually appreciated. In a mine which requires under working conditions 70,000 cu.ft. of air per min. at a

1-in. water-gage, operating the fan at half speed during the night effects a saving of about \$480 annually, when power costs 1c. per kw.-hr., or enough to pay for this fan equipment in about two years' time. The motors may be wound for either 220, 440 or 550 volts, as may be desired.

Combining the fan and motor upon the single cast-iron bedplate renders only one light foundation necessary, and at the same time maintains both motor and fan shaft in correct alignment with, and at the proper distance from, each other. The minimum amount of work is therefore necessary, both in installing this unit and in maintenance and attendance after it is in proper working condition.

### "Pottsville Telltale" for Electric Lamp-Charging Rack

When charging electric mine-lamp batteries in large numbers on a mine-haulage circuit subject to voltage variations and interruption, an active attendant is required to watch all details to see that the batteries receive proper attention during the time they are on charge. The Philadelphia & Reading Coal & Iron Co. has devised an electric servant ready to work every minute of the day or night, one that never gets tired, needs neither rest nor sleep, never complains of too much work, and whose services cost nothing. In fact this is exactly what is embodied in what is termed the "Pottsville Telltale" for miner's electric lamp charging racks.

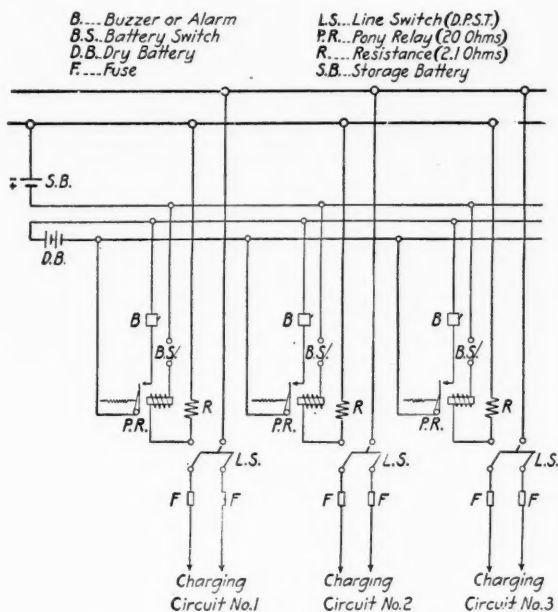


DIAGRAM OF TELLTALE CONNECTIONS

When the charging commences the attendant simply closes a switch and the little worker responds instantly, sticking to the job until finished. The accompanying illustration shows the connections for such a system, which can be applied to any number of charging racks. The equipment consists of a miner's lamp battery, two dry cells, relay, buzzer, resistance unit, switch and wiring. The function of this device is to sound an alarm when any of the following conditions exist:

First, when the charging current varies above or

below the normal by a predetermined amount. Under this condition the operation is as follows: Assuming a charging current of 1 ampere is desired, a resistance unit of 2.1 ohms is inserted in the negative side of each charging circuit, thus giving a voltage drop of 2.1 volts across the resistance. A storage cell which gives a normal potential of 2.1 volts is connected across the resistance through the primary of a relay of about 20 ohms with its polarity opposing the voltage drop across the resistance, the small buzzer being connected in the battery circuit across the relay contacts. Should the charging current drop below 1 ampere the voltage drop across the resistance becomes less than the battery voltage, permitting the battery to discharge through the relay, which will act, closing the contacts, thus ringing the buzzer. Should the charging current increase above 1 ampere the voltage drop across the resistance becomes greater than the storage cell voltage, hence it will take a charging current through the relay, closing the relay contacts, thus ringing the buzzer. By the relay spring adjustment any desired variation of the charging current to a minimum of 10 per cent. can be maintained, the buzzer continuing to operate until the charging current is brought to normal.

Second, should the charging circuit become open by reason of a fuse blowing or poor contacts, no current will flow through the resistance, thus destroying its counter e.m.f., and the full voltage of the storage cell will actuate the relay, thus ringing the buzzer.

Third, should the supply of power fail, the batteries on charge will discharge back into the line. This reversal of current through the resistance will produce a voltage drop that will be added to the battery voltage, which will actuate the relay regardless of the value of the reverse current. It will be noted that the storage cell will automatically keep charged without attention.

The usefulness of this "Telltale" system may be summarized as follows:

It enables the station attendant to maintain the proper charging current without constantly watching the ammeter.

It saves the battery from an excessive discharge in case of a reverse current.

It prevents the battery from becoming injured by an excessive charging rate.

When putting the batteries on or removing them from a rack it immediately notifies the attendant of any poor contacts.

In testing the voltage of each battery on charge it is essential that the proper charging current be maintained when readings are taken; therefore considerable time and work are saved as it is unnecessary to read the ammeter each time.

This device has been in use for the past six months on the "Pottsville charging rack" described in Volume 7, page 427, of COAL AGE, and is giving the results above enumerated.

George Otis Smith says that to increase industrial prosperity in the United States we need to export finished rather than crude products and to import raw materials rather than manufactures. Betterment of industrial conditions can come best through expansion of manufacturing. The increase of the element of labor in the product exported will mean that we are not bartering away our heritage of natural resources, but rather that we are using these resources as a basis simply for the expenditure of labor, which renews itself.

### Extracts from a Superintendent's Diary

Of late I have fallen into a habit of amusing myself by trying to divide all of my subordinates into two classes: Those who would be able to credit all of their impulses to subordinates, or fellows lower in rank, and those who are spurred into action by keeping their eyes constantly upon their superiors.

The idea was suggested to my mind by a sermon in which men were conjured to shun evil companions, and by companions, the minister explained, he meant that one's thoughts should be given first consideration. That text is as old as the hills, but never before had the importance of one's thoughts been brought out so convincingly and it set me to thinking.

It is evident that some people are easily led, but the thing that I had never realized before was that the people who are easily led measure themselves in terms of their inferiors—no wonder the inferiors often take the whip hand. The minister brought that point out clearly and it impressed me.

I began to dig into the motives of the men who call me boss and I found that a man's point of view is the key to most of his actions. Some men spend most of their time comparing their lot with the circumstances of those below them in rank, and they are naturally very much pleased with themselves and have no time to turn about occasionally in search of inspiration from the men above them in position. Others forget the old job as soon as they rise above it and begin to cast longing eyes on the men still higher up; they can never be boastful or fall victims to flattery because they think in terms of the men above them and realize their own insignificance.

At first I tried to discover a third division somewhere between the other two, but I have decided that it does not exist. Numbers of men seem to be satisfied to remain where they are, but they justify their acts entirely by their past record, and as they are continually in need of justification in order to keep their conscience under control, they keep close tab on the men who have succeeded them lower down the ladder.

I find this study of the motives underlying men's actions of the very greatest assistance in choosing men for promotion, and with a little more experience I feel that I shall always be able to pick men who will make good, and in time I shall have a nearly perfect organization.

There is one thing sure and that is with an organization where every man has his eyes on the job of the man just above him, every man, the superintendent included, will have to keep extremely busy to even hold his own, and it wouldn't be possible under such conditions to conceive of a man who considered himself so important to the organization that the organization could not get along without him. That would eliminate a whole lot of unpleasantness because it is pretty hard to handle a valuable man after he becomes possessed of the idea that he is indispensable.

I find myself applying the test not only to my own employees, but to my former associates who are now occupying various high and low positions. And in recalling their ruling passions my memory plays me strange tricks and wanders off into reveries and often before I get control of myself again, I have submitted my past to my own test, and then I realize why at times I stood still.

### How a Coal Miner Can Save

Several years ago there came to the manager of one of the coal mines in the New River field of West Virginia a darky from South Carolina, by the name of Ike Mitchell, who asked to be put to work in the mine. He was given work, and for the first time entered a coal mine. From the start, his industry was noticed, as were also the facts that his home surroundings soon had a clean and healthy appearance, that his wife and children were well clothed, and that his family lived well, as judged by his purchases at the company store.

After working several months, Ike came to the manager one day and asked if he would keep for him some money he had saved from his earnings, and the manager was surprised when he was handed \$300. From this time on, this industrious colored man left his savings with the manager, and at the end of two years, after paying all his living expenses, he had accumulated upward of \$2000 in cash. This he drew, and returned with his family to the cotton fields of his native state. There he bought a piece of land, and the latest report from him was to the effect that he was raising cotton, as well as serving a milk route in a neighboring town, and was still making money from the capital he had accumulated from working in the mine.

Ike Mitchell might have picked cotton in his native state for a life-time before his savings would have amounted to as much as they did in the West Virginia mine in two years, and there is a similar opportunity in many coal fields for the laborer who wants to work hard and save his surplus earnings.

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### Guyan Valley Coal Operators Association

The operators of the Guyan Valley in West Virginia, forming what is known as the Guyan Valley Coal Operators Association, met in Huntington, March 24, for their fourth annual meeting.

The objects of the society are to standardize the sizes of coal, to promote more friendly relations between the employer and the employees, to do more effective betterment work in behalf of the latter, to extend trade to foreign nations, particularly South America, and to disseminate accurate knowledge concerning the industry. C. W. Jones, of Logan, is president; A. R. Beisel, of Holden, is vice-president and A. H. Land, of Barboursville, W. Va., is secretary.

✽

### "Mine, Quarry and Derrick"

Our Canadian friends have been publishing under this title since Feb. 3 of this year an excellent fortnightly magazine of about 36 pages, which appears to be well deserving of the support of the reading public.

It is edited by J. C. Murray, whose fitness for the work is unquestioned. W. C. McGinnis is associate editor, and R. W. Coulthard is a contributing editor. L. S. Kempher is manager. The offices of the paper are at Calgary, Alta. Attention is given all kinds of mining, and the field covered by its title seems to be well filled by this publication. The subscription price is \$3 per year.



## Editorials

### The Layland Rescue Work

The rescue work at Layland after the recent regrettable explosion does not prove the uselessness of oxygen apparatus, but rather the fact that if men so equipped will not take an energetic initiative they will retard rather than aid the recovery of a mine. The Layland operation did not have many live workings, so it is a fit matter for surprise that it was still not wholly explored after four days.

Forty-seven men were after that length of time still huddled in the roadways leading to their working places. They were not hidden in their rooms, nor in old workings, nor buried in the gob, nor under falls of roof, nor in sags full of water, but located and easily findable in just those places where men should first seek them—just where a preliminary reconnaissance might be expected to be made. But they were not discovered; in fact, five men had to come out and reveal their presence, which they did at the drift mouth. Only then were the other 42 men really sought.

Had the work been pressed at Layland as it was at Roy-alton by the state rescue-men of Illinois, an earlier release for the entombed would have been assured. Happily, the unfortunates had a leader, or leaders, of good judgment and marvelous patience; otherwise the long delay would have been fatal to the two small bands of entombed men. As it happened, they suffered only from hunger and thirst, but that their experience was no worse was not due to the work of those directing the rescue.

Who these directors were seems to be open to much doubt. Probably no one was invited to take the lead, yet by tacit consent leadership was accredited to those generally known as the "experts of the Bureau of Mines." It is not well for a coal company already self-condemned by a disaster at its mines—for what company, however correct its management, wholly escapes condemnation—to oppose the representatives of the nation, which have the ear of the public press.

If the state department and the corporation have no oxygen apparatus, they must await the reestablishment of ventilation before investigating any part of the mine. They cannot well bid the oxygen-apparatus men examine this or that place, when they themselves are not competent to do so. Certainly they do not like to instruct the "experts."

So without being arbitrary at all, and without any great obsequiousness on the part of the state department and corporation, the oxygen-apparatus men of the Bureau of Mines are permitted to take the lead. If they fail to do so, effectual apparatus work cannot be done.

We purposely overlook the men from Gary, W. Va. No one could expect an outsider like Vitus Klier to force his little band in ahead of the federal rescuers. So it is clear we cannot avoid the view that to the Bureau of Mines should have been accorded the glory, and to that organization must be accorded—whatever is rightfully due. Let us not express it too baldly.

It is stated that the oxygen-apparatus men examined for fire. They were there, we are told, not so much for salvatory as for precautionary measures, to prevent a second Hanna, Wyo., or Rush Run, W. Va., disaster. Yet air was allowed to play on parts of the mine not explored. The air was so good that men came through it alive, some even entering, working and returning in it, and not being even discommoded.

Had there been a fire, there would doubtless have been a Hanna which would have killed the 47 men and maybe others around the drift mouth. So the oxygen-apparatus men did not fill their part as guards, much less as rescuers.

Brave men there were at Layland. Sore-hearted men they are now, to think that with all their fearlessness they failed to cut the strand of red tape and relied on others when the right of initiative was theirs.

We have always claimed the life of the canary hung on a thread and that the endurance of that bird was not the proper measure for that of a red-blooded man when life was in the balance. Still less is it his measure when he has an oxygen apparatus, and half a hundred men are still unfound and several working places still unexplored.

We do not blame Secretary Lane for his words of congratulation to the bureau under his charge. He is one of the best men in the President's cabinet, and he did but voice the natural judgment of an ill-informed public. But there should be no medals for anyone; for though many were fearless, there seemed to be a lack of moral and mental bravery. The courage of leadership is different from the quality which risks life for humanity, and that courage was lacking.

But if there is to be a medal awarded by the American Mine Safety Association, as Mr. Lane has suggested, it would seem to belong rightly to that veteran who took charge of the 42 men and bade them wall themselves in and prohibited smoking, who put heart into his followers when they despaired. He is a credit to America and to the mining industry. He had courage, brains and heart. By all means, if room can be found to express on a medal all the honor due him let him have it and an engrossed diploma to boot. The whole coal industry salutes him.

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### Amortization, a National Issue

Amortization is the continual replacement of dead by living capital, an action corresponding physiologically to the renewing of dead animal tissues. Without such tissue renewal the physical death of the individual would result, just as without replacement there must come an end of all capital.

We more often consider amortization as the repair of the decadence of a single business than think of it as a corrective of the property decay of a whole industry. Still more rarely do we regard it in terms of a nation as the redemption of a yearly national loss, or in world terms as the replenishment of an annual world-fund decrement. So it is to us a small thing if the result of the business of Tom and Dick and Harry is an unrepaired

loss of capital. We do not see that the death of their property is a partial death of the national or world property from which we must all derive our sustenance.

The nation which loses and does not amortize its losses is not pursuing conservation. It is spending its all on its immediate needs and is drifting to a condition of pauperism. We wonder sometimes if the world realizes that periods of depression like the present are times in which there is a permanent loss to the world's fund. They are times during which there is a real lack of conservation. When the buildings of the nation stand idle and the labor of its people is unemployed, then there is no conservation, but rather capital decay. The construction wealth of past years, the slow accumulations of the centuries are wasted in the immediate expenditures of a generation or part of a generation.

Let it never be forgotten that amortization is not solely an interest of the individual capitalist, but of the nation, or rather of the world. A century without it would restore us to the condition of the Middle Ages, when war and pestilence and lack of machinery took toll on the people just as restrictive legislation takes today.

History records several actual declines in wealth, times when as it were the nations of the world lived on their past and became emaciated from the lack of reproductive energy. No one seems to know what happened, but wealth declined. We may face such a blight if the clothes, pleasures and idleness of the toilers be the sole outcome of activities of capital.

### Clean-Up Day

The annual clean-up day has or should have arrived at all mining camps. The winter has snowed under all the pollutions of months, and winds have scattered the rubbish far and wide. Now the sun is removing the snow and revealing all the distressing unpleasantnesses which have been accumulating.

It behooves all mine managers to get busy and, when nature decks itself in new garments, prevent the unseemliness of beerkegs, waste-paper, ash-heaps and tin cans from spoiling the natural beauties of the town-sites. The cities have their clean-up days, and the villages should have theirs. Above all, the things which cause disease should be removed.

In West Virginia we learn that most of the mining villages will get a general refurbishment. It is to be hoped that in other states an equal energy will be shown.

The period now shortly to follow is one in which disease is often rampant. The ground swept off by rains and melting snows pollutes the streams, and the greatest care should be taken to protect the water-supply. The wash-water from the houses should be sewered to some nearby stream that is not used by men or animals as a source of water-supply, or better yet to a cesspool. Springs liable to contamination should be sealed up.

In some states the turning of sewage untreated into streams is forbidden. Whenever it can be mixed with strong sulphur water from the mines it would probably be rendered entirely harmless. In some states turning untreated mine water into the streams is also unlawful, but the law is probably a dead letter, as the handling of such a volume of water in the existing state of the science of treatment is almost an impossible proposition.

Pollution of water, with consequent milk contamina-

tion, seems the most important source of typhoid. The "typhoid" fly has received much of the blame, but the figures suggest, even if they do not prove, an alibi. We have compiled the case rate for typhoid in Pennsylvania, somewhat arbitrarily terming May, June, July, August, September and October the fly-beridden months and taking the others as being free from that pest, and we have arrived at the following result:

Year	PERCENTAGE OF TYPHOID CASES IN PENNSYLVANIA	
	In Months When Flies Are Common	In Months Which Are Too Cold for Flies
1906	45.8	54.2
1907	44.8	55.2
1908	52.5	47.5
1909	60.6	39.4
1910	62.2	37.8

The uncertainty of results seems to show that a nonseasonal cause is back of the plague of typhoid, and for that reason care should be taken to keep the water-supply under surveillance.

### Why the World Needs Pockets

The cry of the worker of late has been that capital gets an undue share of the gross receipts of industry, the attempt to prove it usually being made successful by sedulously overlooking the cost of material in evaluating the manufacturers' profits. But in recent years it has been extremely doubtful whether capital has been, in any large number of instances, in the receipt of even adequate reward.

It is surely true that the capital of the coal industry, especially of the bituminous branch of it, has been invested without a fitting return. In this case the material purchased, both unmined coal and supplies, may be ignored, and still the showing will attest that the income is meager. Making allowance for the value of the material used and destroyed, the return for coal production is more often loss than profit.

The workman believes that the need for profit would be removed should the state replace the capitalist. This is a grievous error. Profits might be made even larger in order that there might be an opportunity to expand industry with increasing population and in accord with the demands for more complex machinery and equipment arising out of our growing needs and desires.

The worker should never get the full usufruct of his labor under any administration of mundane affairs. If he digs a ton of coal, he cannot expect to get the equivalent of that ton in pay. Some part must go to swell the world capital, and that deduction might be greater under an enlightened socialism than ever it has been under a restrictive capitalism.

Let no one think that when the Millennium comes man will have hands and a mouth, but will get along without pockets. For the pocket is one of the most wonderful contrivances of civilized man. Mankind saves because it thinks, and because it both thinks and saves it is superior to all other animal-kind.

The question of the capitalist has been always, Where do I "come out" when there are no profits? It may be said truthfully that the world is caring less and less as to the answer. But another question is just as natural; namely, How can the public and the workingmen be provided with a progressive, comfortable living or even with the degree of prosperity which they now enjoy if there is no increase in the instruments of production other than an increase of laborers?

## Book Reviews

**THE ANTHRACITE COAL COMBINATION IN THE UNITED STATES, with Some Account of the Early Development of the Anthracite Industry.** By Eliot Jones, associate professor of economics, State University of Iowa, sometime instructor in Harvard University. pp. xiii + 250 + 9 index; 5 7/8 x 8 1/2 in. 7 charts. Harvard University Press, Cambridge, Mass., 1914. Price \$1.50, cloth boards.

This book, which is a perfect mine of information regarding the financial aspect of the anthracite industry, was awarded the David A. Wells prize for the year 1913-14 and is published from the income of the David A. Wells fund. It is a careful, concise, scholarly review of the formation of the anthracite combination. Sometimes we wish it were a little less dispassionate, perhaps, for the interest occasionally flags—and we find ourselves in a mass of information so long and detailed as to be burdensome. But reviewers are apt not to be sufficiently patient, and the man who wants the facts for his weapons of defense or of offense wants a complete armory and not a few instruments of war, no matter how quaint and interesting they may be.

### Arkansas and Virginia Anthracites

We do not feel able to question the facts in this volume, except, perhaps, the short references to geology. But with these exceptions the book is probably in every way reliable. It says: "Other deposits of anthracite besides those in the State of Pennsylvania are found in the United States, but they are so small as to be of slight consequence." "There are deposits" of anthracite "in Alaska, Washington, Arkansas and possibly in a few other states, but as yet little is known of their extent or their value." And again: "The anthracite beds in the southwestern portion of the State of Virginia are now being developed."

The American technician will tell you that there is no anthracite in Arkansas or southwestern Virginia, but the trade will possibly agree with the professor, owing to a difference in definition. If the trade view of what constitutes anthracite is correct, then the Arkansas anthracite is somewhat important. The Geological Survey, by Marcus R. Campbell, its chief, lists in "The Coal Resources of the World" neither anthracite nor semianthracite in southwestern Virginia. However, in an extremely lax use of the word, anthracite is found in Arkansas, southwestern Virginia and even in central Pennsylvania, and the deposits are important. It is wrong to say in one breath that they exist and that they are not of much significance.

### Maps and Charts

The maps in this volume are somewhat deficient, and we cannot but wish that the various railroads had been named and the canals had been charted and designated on maps of adequate size or number. The one map furnished—the same as that in the report made by H. H. Stock on "The Pennsylvania Anthracite Coal Field" for the Geological Survey—does not contain the names of any railroads or canals. Yet the reader can get this information from a good map if he will take the trouble, so that it is not really so important an omission as is that of a map showing the confines of the various districts—Wyoming, Lehigh and Schuylkill; for these divisions are not exactly geologic, but are rather geographic and topographic, and as the geologic areas are alone shown on the map furnished, the student needs to be informed as to the exact delimitations of the commercial areas mentioned.

The book is not quite up to date, the charts and figures unfortunately being only extended up to 1910. The illustration we produce, slightly changed, we have ventured to extend to 1913 on the basis of the report of Edward W. Parker, statistician of the Geological Survey. However, much of the information in the text is not so recent, as it dates back to 1907, when an investigation was made from which many figures in the book are derived.

The following quotations from the book will give a good idea of the character of the information to be found within its covers:

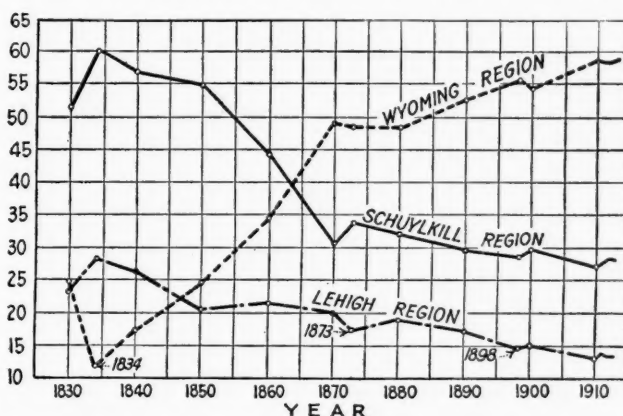
### The Preponderance of the Railroad Coal Companies

"Most of the anthracite coal now produced is mined by the railroads, or by their subsidiary coal corporations, which will be referred to hereafter as the railroad coal companies. This classification head includes the coal departments of roads like the Delaware, Lackawanna & Western, which has always mined its coal directly.

"These companies in 1907 produced nearly 80 per cent. of the total output. By far the largest producing company, in spite of the fact that its coal lands are located mainly in the southern field, where the cost of mining is greater, is the Philadelphia & Reading Coal & Iron Co., which produced, in 1907, 12.3 million tons, or 16 per cent. of the total anthracite output of Pennsylvania. The second largest company was the Delaware, Lackawanna & Western R.R., which mined directly 12 per cent. of the total output. The Reading Coal & Iron Co. and the Delaware, Lackawanna & Western R.R. Co., therefore, together produced considerably more than all the independent operators in the whole anthracite basin.

### The Railroad Companies Increase Their Percentage of Output

"The proportion of the total output mined by the railroad companies has steadily increased. In 1900 the combined production of these corporations was 62 per cent. of the total output, while the operators not controlled by the railroads produced 38 per cent. of the total. By 1901, through the purchase of the Pennsylvania Coal Co. by the Erie and that of a



GRAPH SHOWING PERCENTAGES OF ANTHRACITE MINED IN THE THREE PENNSYLVANIA DISTRICTS FROM 1830 TO THE PRESENT DATE

number of independent operators by the New York, Ontario & Western, the output of the railroad coal companies had increased to nearly 70 per cent. of the total.

"The acquisition of individual properties continued in the years which followed. In 1905 the large firm of Coxe Brothers & Co. was purchased by the Lehigh Valley, and a number of smaller properties were absorbed by other railroad companies. By 1907 over three-fourths—78.04 per cent.—of the total output of anthracite coal was being mined by the railroad coal companies, while less than 22 per cent. was mined by the remaining operators. The largest individual operator at this time was the Kingston Coal Co., producing in 1907 slightly over 1.5 million tons, yet 425,855 tons of this were mined for the Delaware, Lackawanna & Western R.R., and practically all the balance was sold to various railroad coal companies. This was the only independent company with a production of over a million tons. There were eight other companies in 1907, producing over a half million tons, but all these, with one exception, sold practically all their coal at the mines to the railroad coal companies—hence they were not important competitive factors.

### The Railroad Companies Control over 90 per Cent. of the Anthracite Production

"In 1907, as we have seen, the anthracite coal roads, either directly or through their affiliated coal companies, produced 59,960,287 tons, or 78.04 per cent. of the total production of anthracite coal. This does not indicate fully, however, the completeness of their control over the output of anthracite. The production of the individual (and independent) operators in 1907 was 16,875,795 tons. This includes the 425,855 tons mined by the Kingston Coal Co. but belonging to the Delaware, Lackawanna & Western R.R. Deducting this amount,



the independent output is reduced to 16,449,940 tons, or 21.41 per cent. of the total production.

"But, it will be remembered that a large number of the individual operators had entered into long-term, and in many cases perpetual, contracts with the railroad coal companies, whereby they agreed to deliver at the mines to the coal companies all the coal mined by them. The output thus bound by contract in 1907 according to the record in the Sherman Anti-Trust case was 7,427,634 tons. This figure includes two-thirds of the output of the Pine Hill Colliery, approximately one-third being free and really independent. This tonnage, for all practical purposes, was as thoroughly controlled by the railroad coal companies with whom the contracts had been made, as if it had been produced directly by them. It should therefore be added to their production in order to ascertain the extent of their control over the output.

#### RELATIVE AND ACTUAL PRODUCTION OF RAILROAD AND OTHER ANTHRACITE OPERATIONS

Operator	In Percentages								Millions of Tons, 1907
	1900	1901	1902	1903	1904	1905	1906	1907	
Philadelphia & Reading Coal & Iron Co.	16.17	15.88	15.02	14.96	15.46	16.35	15.87	16.01	12.304
Delaware, Lackawanna & Western R.R.	9.61	10.49	11.95	11.48	11.91	11.34	12.61	12.04	9.249
Delaware & Hudson Coal Co.	8.37	9.10	9.52	9.64	8.97	8.94	9.36	9.50	6.661
Lehigh Valley Coal Co.	6.13	6.61	6.84	8.62	8.55	9.54	10.28	10.51	6.676
Pennsylvania Coal Co.									
Hillside Coal & Iron Co. (Erie R.R. Subsidiaries)	6.33	8.22	7.27	6.74	7.02	7.21	7.59	4.246	1.48
Lehigh & Wilkes-Barre Coal Co.	6.01	6.11	5.52	5.94	5.86	5.95	5.93	5.79	4.451
Pennsylvania R.R.*	5.58	5.60	4.69	5.89	6.19	5.93	6.69	6.44	4.943
Lehigh Coal & Navigation Co.	3.87	2.97	2.77	3.02	3.20	3.52	3.85	4.14	3.178
Temple Iron Co.	2.59	2.57	2.35	2.47	2.49	2.40	2.58	2.67	2.053
New York, Ontario & Western Ry.†	2.23	3.58	4.00	3.42	3.66	3.46	3.24	3.35	2.576
Coxe Bros. & Co.									1.394
Total	62.04	69.24	70.88	72.71	73.03	74.45	77.62	78.04	59.960
All other operators	37.96	30.76	29.12	27.29	26.97	25.55	22.38	21.96	16.875
Grand total	100%	100%	100%	100%	100%	100%	100%	100%	76.836

\*Susquehanna Coal Co. and other subsidiary coal companies controlled by the Pennsylvania R.R.

†Seranton Coal Co. and Elk Hill Coal & Iron Co., controlled by the New York, Ontario & Western Ry.

From Transcript of Record in Sherman Anti-Trust Case, iii, Exh. 169.

#### Some of the Independence Is only Relative

"After deducting from the independent output the tonnage sold to the railroad coal companies under the percentage contracts, the independent operators are in control of only 9,022,306 tons, or 11.74 per cent. of the total production. The railroad coal companies controlled, therefore, 88.26 per cent. of all the coal mined. One further deduction, however, still remains to be made. A number of the individual operators sold their total output, or a portion thereof, to the railroad coal companies under contracts based upon the 65 per cent. division, but extending only for a year or in some cases terminable at will by either party. The amount so sold to the railroad coal companies in 1907 was 2,335,918 tons. These purchases placed the railroad coal companies in control, in the year 1907, of 70,149,694 tons, or 91.3 per cent. of the total production. Therefore, though the individual (and independent) operators mined in 1907 nearly 22 per cent. of all the anthracite coal produced, yet so much of this was bound in various ways to the railroad coal companies that only 8.7 per cent. of the total production could be classed as really independent.

#### The Independent Operators Own Less than Nine per Cent. of the Anthracite Coal

"A consideration of the unmined area shows that the proportion of the total output mined by the independent operators will steadily decline. The individual (and independent) operators not controlled by a transportation company owned, in 1896, 9.07 per cent. of the unmined tonnage available for shipment to market. In making this estimate, all the coal not owned by the railroad coal companies has been classified as belonging to the independent operators. Some of this may have been undeveloped and separately owned. But the tonnage owned by the independent operators certainly did not exceed 9.07 per cent. of the total. Since 1896, as the result of the buying out of a large number of operators, the holdings of the railroad coal companies have been considerably increased. It is obvious, therefore, that the proportion of the unmined coal owned by the independent operators has declined.

"In spite of this decline, these operators as late as 1907 mined nearly 22 per cent. of the total output. Yet it is clearly impossible for them to maintain this proportion, inasmuch as they own less than 9 per cent. of the unmined tonnage. A steady decline in their relative output, therefore, is to be expected. Yet just how long their production will continue is difficult to predict with assurance.

#### DISTRIBUTION OF THE UNMINED TONNAGE ON JAN. 1, 1896, IN THOUSANDS OF TONS

Owner	Unmined Coal Owned	Per Cent.	Owned and Controlled by Contract		Duration in Years on Basis of Shipments in 1895
			Per Cent.	Per Cent.	
Philadelphia & Reading Coal & Iron Co.	2,087,490	41.14	2,143,706	42.25	216
Lehigh & Wilkes-Barre Coal Co.	863,760	17.02	877,569	17.30	163
Lehigh Coal & Navigation Co.					
Lehigh Valley Coal Co.	787,200	15.52	855,511	16.87	116
Delaware, Lackawanna & Western R.R.	300,853	5.93	332,332	6.55	54
Susquehanna and affiliated coal companies	248,142	4.89	316,502	6.24	63
Delaware & Hudson Co.	115,823	2.28	115,823	2.29	26
Pennsylvania Coal Co.	94,876	1.87	94,876	1.82	54
Coxe Bros. & Co.	67,361	1.33	69,901	1.38	35
Hillside Coal & Iron Co.	34,718	0.68	38,879	0.77	21
New York, Ontario & Western Coal Co.	13,551	0.27	26,890	0.54	18
Seranton Coal Co.	13,971		13,971	0.28	9
Remainder	460,008	9.07	187,822	3.71	
Grand total	5,073,786	100.00	5,073,786	100.00	

A summary from William Griffith's estimate.

"We may certainly look, however, in the comparatively near future for the elimination of the independent element, unless, indeed, new conditions shall arise through the enactment of additional, and effective, legislation, state or national."

**PRESENT WORTH OF SERIAL PAYMENTS.** By W. E. Fohl, Mining Engineer, Farmers' Bank Building, Pittsburgh, Penn. pp. 20; 4½x6½ in. Price \$1.00 postpaid, linen paper cover.

In this pamphlet are given the present worth or equivalent of single payments of \$1000 to be made after various periods of time, these periods being in a series of half-year intervals running from 6 months to 50 years. The rate of interest is compounded semi-annually and is figured as 3, 4, 5 and 6 per cent. Thus if we desire to pay \$1000 4½ years hence, we find in these tables that we can lay aside \$874.59 and, by the end of the 4½ years, it will have increased in value so that it will meet the payment of \$1000.

The tables also show what fund must be provided to meet, with the help of 3, 4, 5 or 6 per cent. interest, a drain of \$1000 at the end of every six months for times varying by half years from six months to 50 years. For example, if the interest rate is 3 per cent., it will take \$8360.51 to provide for the payment of \$1000 at end of every six months for 4½ years.

Such tables have considerable value for persons who are planning to start up a coal plant. A saving of \$2000 a year which will last 10 years will justify an immediate expenditure of \$14,877.49 figuring on six per cent. as the rate of interest.

With the same increment it is profitable to pay only \$306.56 for a piece of land which it would cost \$1000 to buy after 20 years. There are endless other applications of these tables. If, however, the reader has bought some coal land and can't sell it for any price, he should keep away from such a book for it will spoil the serenity of his slumbers.

**PROCEEDINGS OF THE COAL MINING INSTITUTE OF America, 1913.** R. Dawson Hall, Editor, Tenth Ave. and 36th St., New York City. pp. 240; 6x8½ in. 7 ill. Price \$2, cloth boards.

The proceedings are as usual belated and this year are not as long as has been customary, but the work of R. Baur & Son, the printers, is of exceptional merit. If we may be pardoned for so doing we will mention the principal papers according to our view of their value.

"Basic Coke," by J. K. Campbell is by far the best paper. The discussion on it is also quite valuable especially the remarks of Fred C. Keighley. H. H. Clark's remarks on "Portable Electric Mine Lamps" should be read by everyone. Harrington Emerson's talk on "Efficiency Thought as to Coal Mining" was good, but everyone present thought his discussion was even better. Thomas L. Lewis spoke on a threadbare subject—the way to advance the interests of the coal industry. Somehow when he sat down, his hearers discovered that he had found something entirely new to say. Where everyone else had merely deplored conditions, without finding a remedy, Mr. Lewis offered a not impossible solution.

These are the best parts of the book. As the discussion is given almost without excision much of the best material in the volume is not to be found in any other publication.

## Discussion By Readers

### Recognition of Bravery

*Letter No. 9*—The work of rescue in coal mining has many sides to be considered. I believe that most men have a natural ambition to be recognized and honored as a hero; but the opportunity for action does not present itself during the life of every man. Again, when the opportunity arises it is not every man that can master his own fears and, as previously stated, bring his courage up to the pitch that will enable him to chance the saving of the life of a fellow worker at his own risk.

The desire to achieve honor may, as has already been suggested, lead some men to make a desperate and foolhardy attempt to rescue another and to assume an unwarranted risk in such endeavor. Examples are frequent where a greater loss of life has been incurred, owing to the excessive zeal of would-be rescuers who rush into danger without thorough preparation and with little chance of doing effective work. By such hasty action they not only endanger their own lives, but greatly hamper the later work of rescue dictated by cooler judgment and a better knowledge of the conditions existing inside the mine.

Everything considered, it is readily recognized that the possibility of rescue is often difficult to determine. In some cases men that have been given up for lost have been rescued later by some timely occurrence; and this fact often leads rescuers to hope against hope. It must be remembered, also, that rescue is not always effected from the outside. Many brave deeds are performed by the cooler-headed and more self-possessed among those entombed in the mine. Many a brave man has thus given his life for others, whose self-sacrificing act performed in the dark recesses of the earth has never come to the knowledge of the world.

Mention has been made of the man who has established a record for bravery and has a reputation to sustain. This, in connection with the allurements that any substantial compensation for bravery would offer, may often induce unwise and hasty action in rescue work. Such is more apt to be the case than that, as was suggested, "the substantial recognition of brave acts might increase the efficiency of the work of rescue."

There can be little doubt that mine foremen, assistant mine foremen and firebosses, who are held responsible under the mining law for the safety of the men in their charge and the security of valuable property, perform acts almost every day that would class them as heroes, although such acts are incumbent on them in the faithful discharge of their duties in the mines.

It is seldom that any great good is achieved without some attending evils, and the proposed recognition of heroic acts and self-sacrifice will no doubt prove the truth of this. It might even happen that some worthless fellow, in the hope of securing a pension for life, would contrive a scheme in which he would pose as a hero and secure recognition, but such a possibility is extremely remote.

Permit me to say, in closing, that I believe it would be right and proper to establish a fund, which might be called the Mine Industrial or the Civil Hero Fund, to be supported by the state or by persons of wealth, in the name of humanity. While honorable mention, certificates and medals are well enough, they do not compensate for a crippled body or afford any consolation to loved ones bereaved by the accident.

H. R. K.

Curtisville, Penn.

*Letter No. 10*—Referring to the interesting and valuable discussion of the "Recognition of Bravery" that has recently appeared in COAL AGE, I beg to call the attention of readers to the work that has been done along this line by the American Mine Safety Association.

This is a national association, the object of which is to promote the science of safety in mining by the adoption of logical methods of procedure in mine inspection and in rescue work; to recommend the adoption of approved types of first-aid and mine-safety rescue appliances; to obtain and circulate information on these subjects; and to secure the cooperation of its members in establishing proper safeguards to prevent the loss of life and property by explosions or fires or from other causes.

The American Mine Safety Association confers medals in recognition of acts of heroism, according to the following rules:

1. Medals of heroism will be issued to the most deserving persons who have participated in rescue work in mines, under conditions where their lives were endangered and when human life was saved.
2. Medals will be awarded, not for reckless courage, but for the heroic running of known risks, by the use of careful and scientific methods in conjunction with organized and trained rescue parties.
3. Medals will be awarded only to persons directly instrumental in saving life and under conditions where their own lives were endangered thereby.
4. Recommendations for the award of such medals must be accompanied by all the facts, duly certified by the mine superintendent or other person in charge of the mine-rescue operations and by witnesses personally cognizant of the facts, such data to be referred to the executive committee for recommendation to the president of this association.
5. If the candidate for such medal is deceased, the same will go to his wife or oldest male child, if any.

One of the association's medals was awarded to John C. Davidson, at Terre Haute, Ind., Sept. 12, 1914, for rescue service at Starkville, Colo., following the Starkville mine explosion of Oct. 8, 1910. Mr. Davidson is the first miner to receive this medal.

The form of certificate to be used in applying for the American Mine Safety Association medal of heroism is as follows:

#### CERTIFICATE OF HEROISM, AMERICAN MINE SAFETY ASSOCIATION

In furnishing the information necessary to the award of a medal of heroism, please fill out the following questions in full, giving names and addresses of as many eyewitnesses as possible:

1. Name and address?
2. Date or dates on which services were rendered?
3. Name of mine and its location?

4. A statement of the training previously received by you and under whose supervision and where?
5. Purposes for which the men engaged in rescue or recovery work?
6. Were any lives saved by the act of the above using breathing apparatus? Give names and addresses.
7. Were bodies of victims of disaster recovered by above using breathing apparatus?
8. Did the men wearing breathing apparatus endanger their own lives in the effort to rescue life?
9. A general statement of circumstances or conditions not enumerated above.
10. Names and addresses of witnesses.

I draw attention to the work of our association along this line in order that readers shall be acquainted with the same and that there may be no conflict in our several aims and purposes in so noble a cause.

AUGUST F. KNOEFEL,

President, American Mine Safety Association.  
Terre Haute, Ind.

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### Mining Laws, Legislation and Mine Regulations

*Letter No. 42*—I want to indorse the point so often overlooked but brought out clearly in Letter No. 41, COAL AGE, Apr. 3, p. 613, regarding the difference between gaseous and nongaseous mines and the requirements of the mining law in respect to the same. While I admit that the *gaseous* mine is far the more dangerous, I believe there is much room for legislation in respect to nongaseous mines.

For the past 27 years I have worked in mines of each of these classes, and I fail to see any reason why a nongaseous mine is exempt by law from a morning examination before the men are allowed to enter the mine for the day's work. In my opinion such an examination is as important in one case as in another.

All practical mining men know that great changes take place in roof conditions, especially in pillar workings, during the night. It is a common occurrence for a man who has left his place in safe condition the night before to find in the morning that it has been "working" during the night and that cracks and slips have developed in the roof, making the place dangerous for work. In a gaseous mine, when a fireboss finds such conditions in a place on making his morning examination the place is fenced off and reported as "dangerous," and the men are notified not to go to work until the danger can be removed.

It is true that Art. 25, Rule 1, of the bituminous mine law of Pennsylvania, compels each miner to "examine his working place before beginning work and take down all dangerous slate or otherwise make it safe by properly timbering it before commencing to mine or load coal." It must be remembered, however, that there is a wide difference in the way in which men regard danger. While some men habitually make a careful and thorough examination before commencing work, others neglect this precaution, and they are generally the ones to be caught.

I am sure that a glance at any conscientious fireboss' report book would show a far greater number of dangers from "bad roof" than from "gas." Mining statistics show that a much greater number of accidents occur from "falls of roof and coal" than from "gas." The morning examination of the mine would, moreover, prove a benefit in its daily operation, as it would reveal possible falls of roof on the haulage road, which could be promptly removed, and the necessary timbers set before it is time for the mine to

start up. Such an examination is an absolute necessity in all mines to fully carry out the idea of "Safety First," which is the universal slogan today.

Art. 4, Sec. 14, of the same law requires the employment of shotfirers in mines "where explosive gas is being generated in quantities sufficient to be detected by an approved safety lamp, etc." The same article forbids the firing of shots in gaseous and dusty mines where locked safety lamps are used, "unless the entries and rooms which are dry and dusty are so thoroughly wetted as to prevent the existence of any dry dust for a distance of not less than 80 ft. from the hole to be fired."

Since the large number of experiments made by the Bureau of Mines at its Pittsburgh Testing Station and in other places in this country and in Europe have proved conclusively the explosibility of coal dust in the absence of explosive gas, it seems strange that this same law relating to shotfiring should not apply to nongaseous as well as to gaseous mines. I am glad to say, however, that I know of many mine officials who go farther than the requirements of the mining law and make these precautions obligatory in the operation of their mines.

CHAS. ADAMSON.

South Brownsville, Penn.

*Letter No. 43*—I have been much impressed and can heartily indorse all that has been said in regard to the peculiar position occupied by the mine foreman of a coal mine.

The law provides for his certification and makes him responsible for the ventilation and drainage of the mine and numerous other matters that relate to its safe operation. On the other hand, in order to hold his position with the company, he must *hustle for coal*. The law wants *safety*, while the company wants *coal*. To supply the demand for coal often necessitates putting men in dangerous places, and any objection from the mine foreman in this regard meets with little consideration from the mine superintendent. His terms are, "Get the coal or take your time and get out."

The point I want to urge is that the superintendent is not under any obligations to the state and is not responsible by law for the safe operation of the mine; while the mine foreman, who must take his orders from the superintendent, is made by law responsible for the safety of the operation. I want to say most emphatically that I am in favor of some law that will free the mine foreman from the curse of two masters.

The problem might be solved by the passage of a law providing for daily inspectors in mines, to be paid by the state a salary in proportion to the size of the mine and the number of men in their charge. On these men would devolve the duty of examining the ventilating apparatus and other safety appliances and to see that the mine is operated in compliance with the law. Their duties would not conflict with the operations of the company, provided these complied with the law.

It stands to reason that, by such a method, fewer risks would be taken and as a result there would be fewer accidents, and the mine foreman would not be in danger of losing his position or becoming liable to the law of the state. Beside the daily inspection of all ventilating apparatus and safety appliances, the safety inspector could check the men going in and coming out of the mine. If, however, he had charge of more than one mine, he could



delegate an assistant to do this work for him alternately at one of the mines. Such daily inspectors should not be given charge of greater territory than they could cover regularly each alternate day. It seems to me that some such provision as this would solve the difficulty.

OSTEL BULLOCK,  
Assistant Foreman.

Cleaton, Ky.

*Letter No. 44*—There is a point in the bituminous mine law of Pennsylvania to which attention should be called before this discussion is closed. It has reference to the legal standing and responsibility of the assistant mine foreman.

Art. 4, Sec. 1, of the bituminous law (Penn.) reads, in part, as follows:

When the mine workings become so extensive that the mine foreman is unable, personally, to carry out the requirements of this act pertaining to his duties, he shall have the right to employ a sufficient number of competent persons to act as his assistants who shall act under his instructions in carrying out the provisions of this act.

By the provision of the last clause of the law quoted above, the personality of the assistant is eliminated. He is not permitted to act in his individual capacity, but the law compels him to act in accordance with the mine foreman's instructions. The law thus assumes that all orders issued by the assistant do not proceed from him as an individual, but emanate from the mine foreman, who is given by law all the authority of a personal command. The foreman thus simply uses his assistant as a mouthpiece. But the prosecution of this official, from time to time, would lead one to infer that the law does not intend to relieve the assistant foreman of his share of responsibility. If this is true, the law is a paradox and will undoubtedly require a legal mind to explain its meaning.

The question may well be asked, Can a person be held legally responsible for the results of an action that he has performed at the dictation of a legally authorized superior in office? In attempting to give a positive answer to this question it cannot be assumed that the assistant, in the performance of his duty, acts to a certain extent upon his own initiative. It cannot be assumed that he must do this because it is impossible for the mine foreman to be present to decide and give instructions in every particular case and for that reason the assistant becomes responsible for the result of his actions in carrying out the foreman's orders.

In answering this question regarding the legal responsibility of an assistant mine foreman, due consideration must be given to his relative position as determined by the law. The law seems to compel the assistant to act as the will and pleasure of the foreman dictate, and it seems reasonable to conclude, therefore, that the foreman and not his assistant is thus made the responsible party.

Any other interpretation of the law would provide a convenient way for the mine foreman of a large operation to shift the responsibilities of his position. It is unquestionably true that many mine foremen do take advantage of this means to blame an assistant for his own mistakes. The law has a tendency to make the foreman less efficient in the discharge of his duties, affording as it does a comparatively easy means of making an assistant foreman the scapegoat in case of accident or failure of the foreman's plans.

With an efficient corps of assistants, a mine foreman's work is greatly curtailed, and this doubtless is the object of the law with respect to assistant foremen; but the mine foreman should not be permitted to forget that his responsibilities cannot be curtailed or foisted on another.

If such a construction of the law as I have described is correct, the mine foreman can be held accountable for only a comparatively few of the accidents and violations that are features of coal mining. Many parts of the mine where accidents and violations are the more liable to occur are not under his personal daily supervision, and consequently the blame for such occurrences must be borne by the assistant.

The frequent action of mine inspectors in holding assistant foremen responsible and thereby relieving the mine foremen, I believe, has greatly assisted in fostering carelessness and negligence on the part of the latter official. These men are generally equally culpable with their assistants for a casualty that may be the result of their own lack of supervision and ability to safely direct the work. I believe that if a test case were to be made of this point no judge would uphold the validity of the law. A clear understanding of its meaning is an important factor in safe mining.

Assistant mine foremen have the right to be informed in regard to their legal status as provided by the law. If it is urged that this knowledge would result in greater negligence and carelessness of assistant foremen, it can be said with equal force that it will act as a greater stimulant to the foremen and make them more careful and watchful.

As I understand the law, in its present form, the assistant mine foreman is not and cannot be held responsible for any casualty that might occur in the discharge of his duty as assistant to the foreman; and, until his legal status is specifically defined, he remains immune from the law. If the law requires a victim for sacrifice, let it take the individual upon whom it distinctly imposes the responsibility for the safe operation of the mine.

I. C. PARFITT.

Jerome, Penn.

### Electrical Requirements in Mine Law

In the issue of *COAL AGE*, Mar. 20, p. 516, appears a query of Fred Vinton regarding certain rules in Art. 11 of the bituminous mine law of Pennsylvania (1911). The first rule mentioned is with respect to the use of high-voltage current underground, and the second has regard to the use of certain incandescent lamps in gaseous mines.

The use of electricity at high voltage in any mine introduces a certain hazard if not properly applied, and for this reason each installation should be surrounded with every reasonable safeguard. Reference to the mining laws of the different coal-producing states will disclose the fact that in many cases the use of high-potential current underground is not recognized. It is certainly a very liberal provision that will allow its use, and in order to render it reasonably safe certain safeguards have been provided in the bituminous law of Pennsylvania.

The minimum capacity of 5 kw. placed in this law, on any transformer connected to a high-potential circuit, is such as will meet every ordinary mine requirement; and experience subsequent to the framing of these rules has

shown that this could have been made several times this capacity without working a hardship on anyone. All high-potential apparatus located underground should be placed in a substation; and, inasmuch as these substations are located at a central distribution point, there are few, if any, cases that would warrant the high cost of a substation switchboard equipment and wiring to take care of smaller units than that named in the law. The only possible objection that could be raised to this is that small transformers are required in connection with switchboard instruments; but, inasmuch as these transformers are mounted on and made part of the switchboard equipment, it is obvious that this rule would not apply to such cases.

In the case of high-voltage motors, it is not practicable to use motors of less than 15 b.h.p. underground, and this minimum could safely have been increased to 50 b.h.p. without working a hardship on anyone. Inquiry of the different manufacturers will develop the fact that few small high-potential motors are manufactured for use above ground, and certainly their use underground would be less practicable.

The rule referring to the use of electric lamps in gaseous mines is in keeping with the recommendations of the Federal Bureau of Mines, and their recommendations are based on the results of exhaustive tests on the performance of incandescent lamps when exposed to explosive gas.

Referring to the comments that appear in connection with Mr. Vinton's query, it is fully apparent that the author did not make a thorough "inquiry" as to what this rule actually meant in respect to motor capacity. The rule in no way prohibits or restricts the use of motors of less capacity than 15 b.h.p. in mines, if the same are supplied with current at medium or low potential as defined in the law.

While some rules in the article referred to could be criticized because of recent developments, the rules governing the use of high-potential equipment are extremely liberal and not open to this criticism. If, on the surface, it is not considered safe and practicable to use motors of less than 15 b.h.p. when wound for high potential, it certainly would be wrong to attempt to use them underground where they would be subjected to much severer conditions. The intent of this rule is to restrict the use of high-potential motors to proper locations, and it is not the intention that small equipment be tapped off indiscriminately along a high-potential underground circuit. If the character of the work warrants the cost of high-potential apparatus, no rule of this mining law is in any way a hindrance thereto.

C. M. MEANS,  
Consulting Engineer.

Pittsburgh, Penn.

## Study Course in Coal Mining

By J. T. BEARD

### The Coal Age Pocket Book

#### INFLAMMABLE MINE GASES

The presence of combustible gases in the atmosphere of a mine is always an element of danger for three principal reasons. 1. The percentage of gas in the mine air may be sufficient to form an explosive mixture known as **firedamp**. 2. The temperature of ignition of most of these gases is lower than that of methane, which is usually the chief constituent of firedamp, and the latter is rendered **more readily ignitable** by reason of their presence. 3. The presence of the smallest percentage of a combustible gas assists to that extent the ignition of a **dust-laden atmosphere**, and increases the violence of its explosion when ignited.

**The Inflammable Gases**—The inflammable or combustible mine gases, in the order of their importance, are methane ( $\text{CH}_4$ ), carbon monoxide ( $\text{CO}$ ), ethane ( $\text{C}_2\text{H}_6$ ), ethene or olefiant gas ( $\text{C}_2\text{H}_4$ ), hydrogen ( $\text{H}_2$ ) and hydrogen sulphide ( $\text{H}_2\text{S}$ ). Each of these gases is not only combustible but forms an **explosive mixture** when mixed with air in certain proportions.

**Inflammable Range of Gases**—The combustion of an inflammable gas, under mining conditions, requires the presence of air or available oxygen. The relative proportion of air and gas in the mixture determines the character and completeness of the combustion and the range of inflammability of the gas.

The maintenance of flame throughout a gaseous mixture requires that the **heat of combination** between the combustible and the atmosphere supporting the combustion shall be equal to that lost by **radiation, conduction and absorption** by the air and gaseous products formed. Two conditions are possible.

1. The proportion of gas to air may be such as to give a low **rate of combination** and a correspondingly small generation of heat, which is insufficient to raise the adjacent gaseous molecules to an equal temperature, resulting in a still lower rate of combination and a lesser generation of heat as the action proceeds through the mass till it finally ceases.

2. Again, the proportion of air to gas may be such as to cause an **absorption of heat** greater than that generated when the condition will likewise be a falling one and there can result no general extension of flame throughout the mass.

The first of these two conditions (excess of gas) determines the **higher inflammable limit** of the gas, while the second condition mentioned (excess of air) marks the **lower inflammable limit**. Beyond these two limits the gaseous mixture is not inflammable. In mining practice, mixtures above the higher limit are more dangerous than those below the lower limit, as more air will make them explosive.

**Explosive Range of Gases**—A combustible gas is always inflammable in proportions of gas to air outside of the explosive range of the gas. In other words, the **range of inflammability** is wider than and embraces the **range of explosibility**. The same principles, however, apply in respect to each of these conditions.

The **degree of explosiveness** of a gaseous mixture is increased as the rate of combination is more rapid and the loss of heat less; or decreased as the rate of combining is slower and the loss of heat greater.

### The Coal Age Pocket Book

**Maximum Explosive Point**—It is quite generally assumed that the maximum explosive force of a gas is developed when the proportion of air or oxygen is just sufficient for the **complete combustion** of the gas. While this is sufficiently close for all practical purposes, it is stated (Emich) that the inflammability is not necessarily greatest at this point.

**Inflammable and Explosive Limits**—The following table gives the lower and higher inflammable and explosive limits and the maximum explosive point of the three most important combustible mine gases, except only the higher inflammable limit of carbon monoxide, which has not been determined, but is probably about 80 per cent. The table shows the **percentage of gas** present in the mixture, at each of the five stages given. The lower inflammable limit and the maximum explosive point have been calculated for each of these gases, while the other data are the results of experiment. A normal condition of the air is assumed:

TABLE GIVING THE INFLAMMABLE AND EXPLOSIVE LIMITS AND THE MAXIMUM EXPLOSIVE POINT OF METHANE, HYDROGEN AND CARBON MONOXIDE

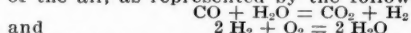
Gas	Lower Inflamm. Limit	Lower Explos. Limit	Maximum Explos. Point	Higher Explos. Limit	Higher Inflamm. Limit
Methane .....	2.5	7.1	9.5	16.7	29.5
Carbon monoxide..	8.4	16.5	29.5	75.0	...
Hydrogen .....	5.0	9.5	29.5	66.3	72.0

The same data, in reference to olefiant gas (ethene or ethylene),  $\text{C}_2\text{H}_4$ , are: Lower explosive limit, 4.0 per cent.; maximum explosive point, 6.5 per cent.; and higher explosive limit, 14.5 per cent. These, however, have only a relative importance in respect to mining, because the percentage of this gas present in mines is very small.

**Peculiarities of Explosion**—A peculiarity in the explosion of a mixture of **methane and air** is that, at the temperature of ignition ( $1200^\circ \text{F.}$ ), about 10 sec. are required before the gas will ignite (Mallard and Le Chatelier), while both hydrogen and carbon monoxide ignite at once, upon contact with the flame. The **time required** for the ignition of methane grows rapidly less as the temperature is increased.

The same authorities also claim that mixtures of methane and air in any proportion are explosive at **high temperatures**, and the same effect has been observed at **high pressures**. In other words, an increase of temperature or pressure has the effect to widen the explosive range of a gas.

A mixture of **carbon monoxide and air** will not explode in the **absence of moisture**. The explosion, in this case, seems to require two stages, the carbon monoxide taking the oxygen from the water, which is replaced immediately by the oxygen of the air, as represented by the following equations:



and  
It has been argued that, since carbon monoxide, which is distilled from coal dust floating in the mine air, is not explosive in dry air, the safest condition is a dry mine atmosphere, which, however, is practically impossible.

## Inquiries of General Interest

### Equalizing the Hoisting Ropes in a Shaft

I want to ask the opinion of COAL AGE and its readers in regard to a problem that has caused considerable discussion at our mine. We have a double-compartment shaft, there being two cages and two ropes that wind on a single drum. When either cage is at the lower landing, the other cage is about 1 ft. below the upper landing.

The question is, How much should each rope be shortened in order that both cages will reach their respective landings at the same time? The length of each rope is such that there are still two coils remaining on the drum when the cage is at the bottom landing.

To illustrate this I have drawn a rough sketch, which shows the lower cage at the landing at the bottom of the shaft, while the upper cage is about a foot below the landing at the surface. It would seem that if a foot is cut

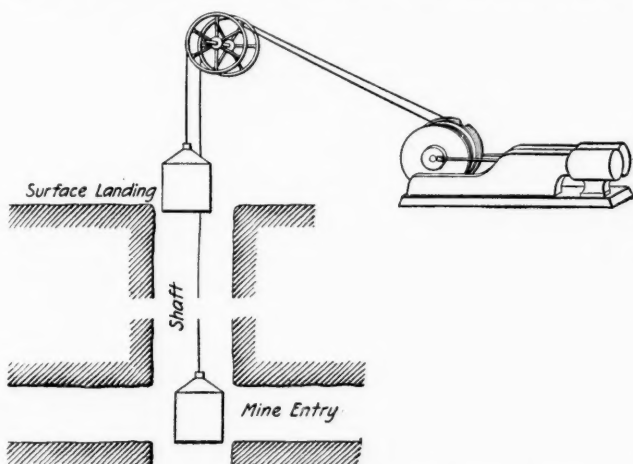


DIAGRAM SHOWING ELEVATION OF MINE HOIST

off of this rope so as to bring this cage to the upper landing, the difficulty would be overcome, as both cages would then be at their landings at the same time. If this is wrong, kindly set me right.

MARTIN SCHUBLE, Engineer,  
Vandalia No. 8 Mine.

Linton, Ind.

It is true that cutting a foot off of, say the east rope in the shaft would bring that cage to the upper landing when the west cage is at the lower landing. If now the cages are reversed, the west cage being raised and the east cage lowered, it is clear that the east cage will have to be lowered 1 ft. further than before, in order to reach the lower landing; and in doing this, the west cage will rise to the desired height at the upper landing. Therefore it will not be necessary to cut anything off the west rope.

If it is desired, however, to cut an *equal* amount off each rope, only one-half of the amount that each cage falls short of the landing at the surface when the other cage is at the bottom should be cut off each rope.

This may be made clearer by supposing both ropes to be marked to correspond to a mark on the frame when the west cage is at the lower landing and the east cage is 1 ft. below the upper landing. Now, if 6 in. be cut off of the east rope, that cage will be 6 in. *below the upper landing*. Likewise, if 6 in. be cut off the west rope, that cage will be 6 in. *above the lower landing*. Now, if the engine is started and the drum rotated 6 in. by the mark on the rope, bringing the east cage to the upper landing, the west cage will at the same time be brought to the lower landing. Or, *vice versa*, if the drum be rotated so as to raise the west cage to the upper landing, the east cage will be lowered the same distance to the lower landing.

### Cost of Producing Coal in Iowa

In order to settle a controversy we would like to have the following questions answered in COAL AGE: What is the average cost of producing coal in Iowa and Missouri? Also, what are the relative percentages of lump coal and screenings produced at the mines in these states?

FRED. MORCK.

Tuscaloosa, Ala.

The only available figures showing the cost of production of coal in the different states are those given in the *Bulletin* of the 13th Census of the United States (1910). The "Census Report" for 1910 gives the following figures for Iowa: Coal production for the year 1909, 7,725,679 tons; value at mines, \$12,679,225; total expenses reported to produce this coal, \$12,816,076.

The same report gives the following figures for Missouri: Coal production for the year 1909, 3,596,691 tons; value at mines, \$5,879,972; total expenses, \$5,715,727.

In speaking of the cost of the production of coal in the several states, the report states that, while the figures for the entire United States show a profit of about 5c. per ton of coal produced, the figures for Arkansas, Iowa, Kentucky, Oklahoma, Oregon, Tennessee, Virginia and West Virginia all show the expense of production as exceeding the value of the product mined. The report advances the opinion that, while the figures given "cannot be taken as showing accurately the amount of profit or loss in the coal-mining industry of the several states, they do seem to indicate clearly that in many states the industry obtains only a very low rate of profit, if any." Correspondence with many coal operators on this point brought the statement that, "while there was a loss in their coal-mining business proper, this was more than counterbalanced by the profits from selling merchandise and renting houses."

No figures are available showing the relative percentages of screenings and lump coal produced. The mining laws of both Iowa and Missouri, however, require the weighing of the coal for the payment of miners before it is screened.



## Examination Questions

### Alabama First-Class Mine Foremen's Examination, Held Jan. 25-28, 1915

(Selected Questions)

*Ques.*—If when making an examination of a mine you found a large body of explosive gas, state what precautions you would take to prevent an accident from the same.

*Ans.*—If the gas is found in the morning examination, before the men have entered the mine, the matter should be reported at once at the shaft or slope bottom or the entrance of the mine, and adequate measures should be at once adopted to prevent anyone from entering that section or district in which the gas was found. If the accumulation is of such volume as to endanger other portions of the workings, the entire mine should be closed and no one permitted to enter, except those authorized to perform the work of removing the gas.

If, on the other hand, the gas is found when the men are at work, no change should be made in the ventilation—not a door should be opened or closed to alter the circulation of the air in the affected section, until the men in that section have been notified to extinguish their lamps and withdraw as quickly and quietly as possible. The work of withdrawing the men should be done promptly. If necessary, the men should be withdrawn also from the adjoining sections.

Having withdrawn the men, every entrance to the affected portions of the mine should be guarded to prevent anyone from entering. Competent firebosses should then be selected and equipped with safety lamps. None others should be employed in the work of removing the gas, which must be started from the intake end of the section. The circulation of air in that section should now be increased so as to provide an adequate air volume to effect the removal of the gas.

The work should proceed slowly and tests be made, from time to time, to determine the progress. All safety lamps should be carefully guarded against any outrush of air and gas caused by roof falls or otherwise. Ample time must be given for the current to sweep away the gas, and special brattices should be erected to deflect the current to the face of the workings and into any void places, where gas might find lodgment.

*Ques.*—If you were the foreman of a mine generating gas and an accumulation of firedamp had collected on the falls, what method would you adopt to remove it?

*Ans.*—First, withdraw all the men from the return of the air current in that section of the mine and in any adjoining sections that might be endangered by a possible roof fall that would drive out the gas into other workings. A strong air current will then be required to dislodge the gas above the falls, since, owing to its low specific gravity, the gas tends to rise into the cavity made by the fall of the roof. It will generally be necessary to erect a special brattice to drive the gas out of these cavities above the falls.

*Ques.*—State fully your opinion of the principal causes of explosions in mines, and give in detail any method you would recommend for their prevention.

*Ans.*—The causes chiefly responsible for gas and dust explosions in mines are the following: The permitted use of mixed lights in mines; insufficient or careless inspection of the workings while the men are in the mine; hurried and incomplete examination of the mine in the morning, before the men enter for work; permitting the accumulation of fine coal and dust in the workings and on the roads throughout the mine; the excessive use of black powder in blasting the coal; badly placed shots and failure to properly mine and free the shots before firing; the use of coal slack or other combustible matter for tamping the holes; failure to properly ventilate the abandoned workings of a mine; the use of defective or poorly designed or improperly cleaned safety lamps; the use of safety lamps by inexperienced men; carrying matches into a gaseous mine for the purpose of smoking; tampering with a safety lamp; fooling with safety lamps and with gas, or lighting the latter for fun. These, together with the numerous risks taken by many miners, are the chief causes of mine explosions.

*Ques.*—Will coal dust extend a mine explosion throughout the entire mine, in the absence of explosive gas?

*Ans.*—Coal dust allowed to accumulate on the roads, timbers and walls of a mine will extend any explosion of gas or dust in a mine when the explosion has been once started, whether or not gas is present on the roads or in the entries. The force of the explosion, which would otherwise extend itself but a short distance, throws the dust into the air and the flame of the explosion, feeding on this dust suspended in the air, is extended throughout the workings as long as there is dust to burn and oxygen to support the combustion.

*Ques.*—Give your opinion of the best method of humidifying the air in mines.

*Ans.*—As stated in COAL AGE, Feb. 27, p. 386, there are many types of apparatus used for this purpose, and it is difficult to say that any single type will give the most satisfactory results under all conditions. In humidifying mine air, practically, it is absolutely necessary to heat the air entering the mine to a temperature somewhat above that of the mine workings, before introducing water vapor (steam) into the air current. This heating is necessary in order that the air shall take up as large a quantity of the water as possible.

This heated moist air will be slightly cooled in its passage through the mine and, as a result, some of its moisture will be deposited in the workings; while at the same time the saturated air is prevented from absorbing moisture from the mine and drying out the workings. However, under the varying conditions in mines, it is generally observed that the air current alternately deposits and picks up moisture in its passage through the workings. In other words, in actual practice, the air current serves as a carrier of moisture from one portion of the mine to another, and it is difficult to avoid this condition.

## Coal and Coke News

### Washington, D. C.

According to announcements made here, the question of higher rates on coal and coke moving over the lines in Western Trunk Line and Southwestern Tariff Committee territory will be heard before Interstate Commerce Commissioner Daniels in Chicago on Apr. 14-16. The entire new series of hearings, covering proposed advances on hay and broom corn, cotton piece goods, grain, rice, fruits and vegetables, packing house products, live stock and other products will extend to May 10.

Various statements on different phases of the case have already been filed, and are receiving study here. One of these presents the reasons of the roads for proposing an advance in the rates on coal and coke. According to the presentation of the roads' case in the written briefs, the basic reason for advancing rates on coal and coke is that the burden on shippers would be small while the aid to the carriers in the territory under discussion would be large.

This increment to railroad revenues from the proposed higher rates on coal and coke is estimated at \$1,266,000 annually while the per ton cost to shippers would be less than 8c.; or, based on consumption per inhabitant, would be about 5c. per annum per person throughout the territory, assuming that the extra rates were added to the charge for coal to the consumer at retail.

From the traffic standpoint, it has already been orally argued in the hearings thus far held that coal at present rates of transportation brings no real income to the roads owing to the unsteadiness and uncertainty of the traffic and the frequent periodical strikes leading to suspensions of business—total or partial—which cut off tonnage and derange the whole freight adjustment.

The seasonal nature of the industry and the added uncertainty brought about, as just indicated, by labor troubles and strikes, differentiating it from many others, necessitates the maintenance of an unduly large supply of cars, and otherwise adds greatly to the cost and trouble of the whole trade. Hence, it is claimed, the justification for an advance.

Producers and shippers have seemed disposed to rebut these arguments in much the same way that was resorted to in the North Dakota coal rate cases—by showing that the roads are prosperous and able to make up on other commodities what they fail to earn on coal. Much the same point of view was developed in the Eastern hearings of last spring (a year ago) when it was clearly shown, in addition, that the bituminous coal operators had for some time been in most cases on so narrow a margin of profit that to add to the shipping expense would put some, at least, out of business by making it impossible for them to compete at the points where prices were most keenly contested.

Shippers' representatives generally are endeavoring to show that the roads are as well as, or better fitted than, the shippers, to bear the brunt of present conditions, and that the general state of business consequently affords no warrant for any effort to shift the load from the shoulders of the carriers to those of the public. It is understood that the entire series of hearings is to be finished by May 10 and that the briefs of the roads are to be in hand by the end of May and the answers of the shippers by the middle of June next. The whole case will, it is expected, be in by the beginning of the month of July and this, it is supposed, would render possible a verdict immediately after the summer recess.

#### PENNSYLVANIA

##### Anthracite

**Pittston**—The site of the former Ewen breaker of the Pennsylvania Coal Co., which was burned to the ground several months ago, is at present a busy spot with preparations going on for rebuilding. It will be replaced by what will be one of the most modern breakers in the entire anthracite region, absolutely fire-proof in every respect, and with modern equipment for the preparation of coal. The work is to be pushed rapidly so that the place may be running within a year.

**Scranton**—After two months of low production, the output of anthracite last month was slightly larger than that of March, 1914. This increase was due partly to the stimulus

of the heavy April discounts and partly to the fact that three successive months of low production would cause a coal shortage later in the year that it would be difficult to make up. It is not possible to increase the number of railroad cars and the rate of output to any considerable extent to meet an increase in demand.

**Edwardsville**—Officials of the Woodward Colliery, of the Delaware, Lackawanna & Western R.R. Co., are proud of the record made on Mar. 29, when 2262 cars of coal were dumped at the breaker. R. M. Keifer, outside foreman, and Richard Thomas, assistant superintendent at the colliery, are receiving congratulations for the new record. The former record for this breaker made several years ago was 2143 cars.

**Wilkes-Barre**—A rather important and interesting case is being tried in the courts here, in the case of the Kingston Coal Co. against the Plymouth Coal Co., in which the courts are asked to make permanent a temporary injunction to restrain the Plymouth Coal Co. from stopping its fan at the abandoned Dodson Colliery. The Dodson Colliery adjoins the Gaylord Colliery of the Kingston Coal Co. and the barrier pillar between the two operations has been crushed or punctured at two or three points. Several months ago a suit filed by Plymouth Borough to restrain further mining by the Plymouth Coal Co., in Dodson Colliery, under charge that it would endanger surface property, forced the Dodson to be abandoned. The Kingston Coal Co. charges that the stopping of the fan would be dangerous to employees of the Gaylord Colliery and testimony is being taken to determine whether the Dodson Colliery fan will have to be kept in operation, since the mine has been abandoned.

**Lansford**—The Lehigh Coal & Navigation Co. has suspended operations of the two steam shovels engaged in removing the huge culm banks between Lansford and Coaldale.

**Jeansville**—A forest fire in the vicinity of the Lehigh Valley Coal Co.'s breaker recently threatened the structure to such an extent that the officials of the concern ordered out all its employees to fight the flames, which were finally gotten under control.

**Hazleton**—It was recently decided by Judge George Gray, umpire for the Anthracite Conciliation Board, that electricians, electricians' helpers, watchmen, firebosses, stable bosses, engineers and other monthly men in and about the anthracite mines, are entitled to a wage advance of 10 per cent. in accordance with the amended agreement in effect between the operators and their employees since 1912. The contention of the employees of the G. B. Markle Co., who sought pay for brattice work, was not sustained since the complaints were not supported by evidence.

**Pottsville**—The Kaska William colliery, one of the largest operations in Schuylkill Valley, will resume work shortly. Owing to the dull condition of the coal trade, water was allowed to fill a portion of the workings, but orders have been issued to pump this out. This colliery is leased to the Lehigh Coal & Navigation Co., and during its period of idleness many improvements have been made, including the sinking of a new shaft.

It is reported that the coal mines of the Philadelphia & Reading Coal & Iron Co. will be operated full time until further orders. It is believed that 40,000 men engaged in the 50 collieries and washeries in Schuylkill and Northumberland Counties will have a summer of unusual activity.

##### Bituminous

**Connellsville**—The weekly production of coke is now in the vicinity of 285,000 tons as compared with about 200,000 tons for the beginning of January. Present increases are due almost entirely to merchant ovens.

**Pittsburgh**—River shipments of coal during the month of March have been the smallest for many years, if not for the coal industry. This is due to the low stage of the rivers.

**Greensburg**—The stable of the Berwind White Coal Co., at Herminie, was recently burned, entailing the loss of considerable live stock. The total loss is estimated at \$20,000 and the origin of the fire is undetermined.

**Leisenring**—A safety first demonstration was recently held by the employees of the Leisenring No. 2 mine of the H. C. Frick Coke Co. This is said to be the first exhibition of its kind ever held in this section, and on account of its success similar demonstrations will be held at various other plants of the company.

**Noblestown**—The Fayette Coal Co. has closed its mine indefinitely.

#### WEST VIRGINIA

**Huntington**—Coal operators who recently returned from Washington where a meeting of coal men from West Virginia was in session for several days predict that a permanent state organization will be perfected in the near future.

**Montgomery**—It is reported that the mines of the Sunday Creek Co. will resume operation shortly after a shut down of several months. These mines are now under new management, and it is said that orders for Lake trade have been received which will keep all the operations running for some time. About 2000 men will be given employment.

**Bluefield**—It was reported here recently that the Lake Superior Coal Co., operating a shaft a few miles from Welch, which has been shut down for about two weeks on account of a cave in, would resume work shortly.

**Charleston**—Plans are being perfected for an extraordinary meeting of coal operators representing every field in West Virginia to be held in Huntington on Apr. 12, for the purpose of a thorough conference on the subject of the coal industry in general and a discussion of means for extending the trade. This meeting will be a sequel to the one recently held in Washington.

It has been announced that the Sunday Creek Coal Co. will make a number of changes in the preparation for market of the product of its mine. The production of the sizes formerly prepared will be discontinued and supplanted by new ones. A number of changes in the tipples, including the installation of new screens, will be made to conform to the new requirements.

According to Chief Mine Inspector Earl Henry, of the Department of Mines, violation of the mining laws of the state has been responsible for many of the recent accidents in the mines. This factor, in connection with elements of danger left to the inexperienced and ignorant, constitutes the greatest source of risk. Attention to detail, therefore, and strict compliance with the law, is suggested as the means of avoiding many accidents.

#### TENNESSEE

**Petros**—Large portions of the state's coal holdings at Petros, where the mines are worked by convict labor, are exhausted, according to the report of Dr. L. C. Glenn, of Vanderbilt University, to the chairman of the Tennessee Board of Control. Mine No. 3, he says, has a reasonable expectancy of about 10 years, unless the area of good coal west and northwest of the mine should prove large. The seam now being worked is the only one above drainage suitable for mining by convicts, and this seam in the western part of the property is too thin and too badly broken by partings to be of any value.

#### KENTUCKY

**Lexington**—Creditors of the bankrupt Wolf Valley Coal Co., of Roosevelt, Breathitt County, have elected F. B. Rodman, of Mt. Sterling, trustee and the property of the Wolf Trading Co., which conducted the commissary of the mining company, has been ordered sold.

**Paducah**—Work has begun here at the barge-building plant of the West Kentucky Coal Co. on 40 barges, and 150 men have been put to work. Each of the barges will be 125 ft. long, 26 ft. wide and 8 ft. deep. When completed they will be placed in the river trade of the company.

**Wayland**—A ruling is looked for before long in the case of Tandy Martin against the Elkhorn Mining Corporation on a demurrer filed by the defendant in the United States District Court at Catlettsburg where a \$100,000 damage action is on trial. The action is for damages over alleged rights exercised by the coal company in developing and working its coal operations on land now owned by Mr. Martin. Several years ago, before the Elkhorn & Beaver Valley R.R. was built up Beaver Creek the coal companies bought the coal under most of the land in this section, and in taking deeds from the farmers the purchasers claimed numerous rights which the farmers now contend are inconsistent with the farming rights when the development comes. This is the first operation in Beaver Valley by any coal company and Mr. Martin contends that the coal company has gone beyond its rights, the suit being the outgrowth of the alleged infringements

of the plaintiff's rights. Every landowner in the section who has sold his mineral rights is anxiously watching the outcome of the suit and many have volunteered to help defray the costs. If the demurrer should be overruled the case would probably be called for trial at the May term of court.

#### INDIANA

**Vincennes**—The Oliphant-Wasson Coal Co. is now shipping from its new Bruceville mine. The quality of coal is high. The plant is equipped to take out 5000 tons a day.

**Petersburg**—After a month's idleness, the Blackburn mines are preparing to begin operating again.

#### ILLINOIS

**Murphysboro**—The dismantling of the Harrison mine of the Big Muddy Coal & Iron Co. means the elimination of washed coal from the Big Muddy District. The washer, however, will clean up the huge pile of screenings, something like 100,000 tons, which were piled up on the ground last fall, and when this is completed, it will also be dismantled.

**Benton**—It is expected that the first coal will be taken out some time this coming month, from the new mine of the Middle Fork Mining Co. The electrical machinery by which the mine will be operated entirely is practically ready.

**Hanaford**—The mine at Hanaford recently acquired by a Chicago coal syndicate has been thoroughly reorganized, and put in condition, and will soon be one of the busiest spots in the country. This mine is owned by the John A. Logan Coal Co., and an effort is being made to change the name of the post office to Logan.

**Greenville**—Seven men are known to have been killed by an explosion of gas in the mine of the Shoal Creek Coal Co., near here, while 10 more are missing. The 7 bodies have been recovered. The explosion occurred 200 ft. underground, and ¼ mile from the main shaft. Only a small portion of the mine was damaged, and to this is attributed the small loss of life.

### FOREIGN NEWS

**London, England**—The committee appointed by the Board of Trade to inquire into the cause for the rise in the retail price of coal for domestic use has recommended that if prices do not return shortly to a reasonable level that the government should consider a plan for assuming control of the output of the collieries during the continuance of the war.

**Toronto, Canada**—The anticipated trouble between operators and miners in the Crows Nest Pass mining district has been averted. There have been frequent industrial disputes and strikes in this district, and three years ago the Labor Department at Ottawa succeeded in getting an agreement settling all matters in dispute signed by both parties. The agreement expired Mar. 31, and the operators were anxious to reduce wages, while the miners claimed that they should be increased. Eighteen mines and about 6000 miners were involved. A compromise was effected on practically the same basis as the former wage scale, and a new agreement made for a term of two years, which has been duly ratified by the unions.

### PERSONALS

George Crankshaw, assistant to Vice-President Ludlow, of the Lehigh Coal & Navigation Co., has been named as successor to Charles Dorrance, who recently resigned as superintendent to go with the Delaware & Hudson Co.

M. L. Trotter, foreman for the Empire Coal Mining Co., Empire, Ky., has resigned his position to take effect at once. It is not known where Mr. Trotter will locate. He is considered one of the foremost mining men in the Kentucky field.

Harry J. Burnett, who for some time has been employed by the Colonial Coal Co., at Dorchester, Va., has severed his connection with that firm, and accepted a position with the Algonquin Coal & Coke Co. at Algonquin as chief engineer. He has already assumed his new duties.

George F. Schwartz, who has been connected with the sales department of the Sunday Creek Co. for 13 years, has been made assistant general sales agent with headquarters in Columbus. Mr. Schwartz started to work for the company Apr. 1, 1902, and his latest promotion came on the 13th anniversary of that event.



John Evancho, a miner of Freeland, Penn., has the distinction of being the first anthracite coal miner to ride to and from his work in his own automobile. He is employed in the Lehigh Valley mine at Eckley, four miles from home. On Sundays he utilizes the machine in taking his family to church and on joy rides after dinner.

Lewis Peterson, aged 72, the oldest employee of the Central Coal & Iron Co., is suffering from a broken leg which he sustained when caught under falling coal. Some time ago he was retired on account of his advanced age but objected to enforced idleness and at his own request was restored to a place on the pay roll.

Paul B. Liebermann, formerly assistant chief engineer of the Sprague Electric Co. has joined the Hyatt Roller Bearing Co. as engineer of tests. In his new position he will have full charge of all tests, both laboratory and field, for the purpose of determining the exact saving to be effected by the adaption of the Hyatt roller bearing to all applications.

George Cochran, of the Cochran Coal Co., has installed a wireless station in his office, the first of its kind in Bessemer, Ala. He uses it more for pleasure than business, although he belongs to the wireless association, and has his call. The station has attracted much attention. It has a range of 350 miles for sending messages, but can catch them at a far greater distance.

## OBITUARY

Adrian Bush Cather, late superintendent of the Bowwood Mine of the Republic Iron & Steel Co., died at Smithfield, Penn., Apr. 2. He was buried from his home at Flemington, W. Va., Apr. 4. Mr. Cather was well known among a large circle of acquaintances throughout Fayette and Westmoreland Counties to whom his death was unexpected. He stood high in his chosen profession of mining in which he had made a proud record. He is survived by his father, J. B. Cather, a prominent resident of Flemington, his mother, four brothers and two sisters.

Robert L. Martin, 67 years of age, a veteran Connellsville coke operator, died at his farm near Princeton, N. J., Apr. 1. Mr. Martin was born in Philadelphia, coming to the coke regions in the '70s and locating at Fairchance where for some years he was manager of the furnace and coke plants of the Fairchance Iron Co. Later he became interested in the coke business, eventually becoming manager of the Bessemer Coke Co., one of the leading merchant interests of the Connellsville region. He retired as manager of the Bessemer plants when they passed into the control of the Hillman interests, and in 1913 moved to his New Jersey farm. He was of a genial disposition, and had many friends throughout Fayette County, Penn., to whom he was universally known as "Bob" Martin. He is survived by his widow, two sons, and three daughters.

## RECENT COAL AND COKE PATENTS

**Smoke Consumer.** O. A. Schroeder, Lodi, Calif. 1,124,066 Jan. 5, 1915. Filed Oct. 25, 1913. Serial No. 797,273.

**Grate Bar.** L. G. Van Nostrand, Scranton, Penn. 1,122,338 Dec. 29, 1914. Filed Aug. 1, 1913. Serial No. 782,402.

**Coal Loading Device.** T. H. Smith, Decatur, Neb. 1,122,546 Dec. 29, 1914. Filed Feb. 24, 1914. Serial No. 820,639.

**Furnace Grate.** W. C. Armstrong, Springfield, Ohio. 1,124,252 Jan. 12, 1915. Filed May 20, 1912. Serial No. 698,366.

**Mining Machine.** S. M. Mavor, Glasgow, Scotland. 1,124,159 Jan. 5, 1915. Filed May 12, 1914. Serial No. 838,118.

**Dumping Mine Car.** C. Layton, Mount Pleasant, Penn. 1,124,147 Jan. 5, 1915. Filed Feb. 24, 1914. Serial No. 820,747.

**Method of Handling Coal.** G. D. Curtis, New York, N. Y. 1,122,577 Dec. 29, 1914. Filed May 18, 1912. Serial No. 698,089.

**Fastening Device for Boxes for Mine Drilling Machines.** G. Griffith, Des Moines, Iowa. 1,123,731 Jan. 5, 1915. Filed Mar. 9, 1914. Serial No. 823,360.

**Fire Bridge for Marine Boilers.** F. J. Blake and R. C. Caldwell, Southampton, England. 1,124,102 Jan. 5, 1915. Filed Apr. 8, 1913. Serial No. 759,727.

**Smoke Eliminating and Draft Apparatus for Furnaces.** L. W. Pietsch, Post Falls, Idaho. 1,124,513 Jan. 12, 1915. Filed Mar. 25, 1913. Serial No. 756,641.

## TRADE CATALOGS

**The Harris-Stevens Co.** of Pittsburgh, Penn. "Modern Mine Cars." Eight pages, 6x9 in., illustrated.

**The Hudson Machinery Co.**, New York. "Hudson Duplex Wagon Loader." Four pages, 6x9 in., illustrated.

**The Combustion Engineering Corp.**, New York, Bulletin B-2, "Type E-Stokers." Nineteen pages, 6x9 in., illustrated.

**The Link Belt Co.**, Philadelphia, Chicago and Indianapolis. "Link Belt Electric Hoist." Four pages, 6x9 in., illustrated.

**General Electric Co.**, Schenectady, N. Y. Bulletin No. 48,014. "Mine Hoist Equipment." Illustrated, 32 pp., 8x10½ inches.

**The Terry Steam Turbine Co.**, Hartford, Conn. Bulletin No. 19. "Centrifugal Pumps." Illustrated, 64 pp., 6x9 inches.

**The C. O. Bartlett & Snow Co.**, Cleveland, Ohio. Bulletin No. 43. "The Cobasco System." Eight pages, 6x9 in., illustrated.

**The De Mayo Coaling Co.**, New York City. "De Mayo Portable Elevators and Unloaders." Fifteen pages, 6x9 in., illustrated.

**The Link Belt Co.**, Philadelphia, Chicago and Indianapolis. "The Wendell Centrifugal Coal Dryer." Four pages, 6x9 in., illustrated.

**The General Electric Co.**, Schenectady, N. Y.—Bulletin No. 46,251. "Outdoor Metering Outfits." Four pages, 8x10½ in., illustrated.

**The Electric Service Supplies Co.**, Philadelphia, New York and Chicago. "Never-Creep Guy Anchors." Six pages, 3½x8¼ in., illustrated.

**Felt & Tarrant Mfg. Co.**, Chicago, Ill. "The Comptometer as Applied to Engineering Calculations." Twenty-three pages, 6x9 in., illustrated.

**The Roberts & Schaefer Co.**, Chicago, Ill. "Locomotive Coaling Plants." Eight pages, 9x11 in., illustrating and describing large locomotive coaling stations.

**Justrite Mfg. Co.**, Van Buren and Clinton St., Chicago, Ill. "Acetylene Lamps, Chemical Fire Extinguishers, Safety Oil and Oily Waste Cans, Etc." Illustrated, 16 pp., 3½x6 inches.

**The Harrison Safety Boiler Works**, Philadelphia, Penn.—Engineering Leaflet No. 17. "Reducing Boiler Room Cost by Heating and Softening the Feed Water." Twenty pages, 6x9 in., illustrated.

**The Cambria Steel Co.**, Philadelphia and Johnstown, Penn. "The Slick Mine Tie." Forty-one pages, 6x9 in., illustrating and describing the advantages of the Slick steel mine tie as applied to coal mines.

**The T. L. Smith Co.**, Milwaukee, Wis. "First Lessons in Concrete Work." Forty pages, 6x9 in., illustrated. Although this book might be termed a catalog, it contains much information and valuable suggestions concerning small concrete jobs.

## NEW PUBLICATIONS

**Department of the Interior**, Bureau of Mines—Bulletin 84, "Metallurgical Smoke," by Charles H. Fulton. Ninety-four pages, 6x9 in., illustrated.

**Department of the Interior**, Bureau of Mines; Technical Paper 76; "Notes on the Sampling and Analysis of Coal," by Arno B. Fieldner; 61 pages, 6x9 in., illustrated.

**Department of the Interior**, U. S. Geological Survey. Bulletin No. 589. "The Chalcite Marble and Dolomite of Eastern Vermont." By T. N. Dale; 67 pp. 6x9 in.; illustrated.

**Department of Labor and Industry**, State of Montana, First Biennial Report 1913-1914, W. J. Swindlehurst, Commissioner. Three hundred and fifty pages, 6x9 in., unillustrated.

**Department of the Interior**, U. S. Geological Survey. Bulletin No. 559. "Results of Spirit Leveling in Michigan, 1911-1913." By R. B. Marshall, Chief Geographer; 79 pp. 6x9 in., illustrated.

**Department of the Interior**, U. S. Geological Survey. Bulletin No. 572. "Results of Spirit Leveling in Nebraska, 1896 to 1913 inclusive." By R. B. Marshall, Chief Geographer; 57 pp., 6x9 in., illustrated.

**Illinois Coal Mining Investigation**, State Geological Survey, Department of Mining Engineering, University of Illinois—Bulletin 9, "Coal Mining Practice in District Three," by S. O. Andros. Thirty pages, 6x9 in., illustrated.

Department of the Interior, U. S. Geological Survey. Water Supply paper 330. "Surface Water Supply of the United States, 1912. Part X. The Great Basin." By F. N. Henshaw, E. A. Porter and G. C. Stevens; 275 pp. 6x9 in., with numerous tables.

## INDUSTRIAL NEWS

**Chicago, Ill.**—The Roberts & Schaefer Co. has been awarded a contract by the Oliphant-Wasson Coal Co. of Vincennes, Ind., for equipment for a Marcus patent coal tippie for installation at the mine at Braceville, Ind.

**Philadelphia, Penn.**—The federal grand jury on Mar. 31 returned three indictments against the Philadelphia & Reading Coal & Iron Co. for violation of the interstate commerce law in connection with coal shipments to and from Philadelphia.

**Columbus, Ohio**—The general and executive offices of the Hocking Valley Products Co. have been moved from the Harrison Building to a remodeled structure near Town and High St. One entire floor is now occupied, giving additional space.

**Denver, Colo.**—The Denver office of the Sullivan Machinery Co. announces that following May 1 it will be located at 837 Equitable Bldg., and that it will continue to carry the same stock of repair parts and complete machines at Denver as heretofore.

**Youngstown, Ohio**—The Republic Iron & Steel Co. recently let a contract to the H. Koppers Co. of Pittsburgh, for 92 byproduct coke ovens to be erected at a cost of one million dollars. The company already has a byproduct plant of 68 ovens in operation.

**Columbus, Ohio**—The Lorain Coal & Dock Co. has awarded a contract to the Roberts & Schaefer Co. for the designing and building of a large Marcus patent coal tippie of steel construction complete with screening and picking facilities for installation at the mine at Craneco, W. Va. The contract price is \$45,000.

**Pittsburgh, Penn.**—Attorney George H. Calvert was recently appointed in Common Pleas Court, master, to sell the properties of the Pittsburgh-Buffalo Coal Co., which are included in the foreclosure proceedings of the Union Trust Co. Six coal mines of the defendant are to be sold according to the decision of Judge Thomas J. Ford.

**Birmingham, Ala.**—By Apr. 15 the gates in the \$3,750,000 lock (17) in the Warrior River will be placed and barges loaded with coal, lumber, etc., will be plying regularly between Cordova and the Gulf. This will mark the completion of the \$12,000,000 job of giving 6 ft. of water all the year round from Sanders Ferry to Mobile.

**Grafton, West Va.**—Instructions have been issued by officials of the Albright Smokeless Coal Co. to immediately complete the work on the plant of that company started last year. This plant, it is said, will be in operation by May 1. The Kingwood Colliery Co., it is understood, expects to open its mines at Snider near Kingwood shortly.

**Buffalo, N. Y.**—Secretary of War Garrison has instructed the Delaware, Lackawanna & Western R.R. Co. not to moor Lake vessels at the north pier, where the company's shipping trestle has stood for many years. A request that the company be allowed to move the dock back 60 ft. has been denied. Just how the company is to supply coal to vessels during the coming Lake season is in doubt.

**Allison, Penn.**—Orders have been received by the Allison plants Nos. 1 and 2 of the Rainey interests near Uniontown, to fire all ovens and the two plants are operating to capacity with something like 300 ovens burning. The No. 2 plant is of recent construction and for some time past only a part of the block of 100 ovens has been burning. The ovens at these two plants are of the square type.

**Philadelphia, Penn.**—Through its attorneys, the Pennsylvania R.R. Co. on Mar. 31 entered a plea of "not guilty" before Judge Dickinson in the United States Court to two indictments of 5 counts each charging it with the granting of rebates to the Glen-White Coal & Lumber Co. on the transportation of bituminous coal and coke from Kittanning Point, Penn., to points in New Jersey and New York.

**Seranton, Penn.**—The sinking fund of the Nay Aug Coal Co. was drawn upon recently to satisfy collateral trust notes due this year, and all of the notes thus due were retired.

Additional money of the sinking fund was used to redeem some of the 1916 notes although they were not yet due. The total of the obligations thus redeemed amounted to \$6000. This coal company has a small colliery on Meade St., Dunmore.

**Ashtabula, Ohio**—The Pennsylvania R.R. Co. now has stored in its yards at the north end of the city at least 30,000 tons of coal which are awaiting shipment to Canada as soon as navigation is open. The Pennsylvania yards are now operating on a 4 yard engine basis, and it is probable that the number of these engines will be increased within the next few weeks or as soon as Lake transportation opens sufficiently.

**Pittsburgh, Penn.**—A permanent injunction was refused by Judge Thomson of the District Court of the United States for the Western District of Pennsylvania on Apr. 4, and the preliminary injunction dissolved, restraining John H. Jones, one of the receivers, from taking an appeal against the final decree previously handed down by Judge Ford in foreclosure proceedings by the Union Trust Co. against the Pittsburgh-Buffalo Co., and an appeal was taken.

**Lewes, Del.**—It is believed that the crews of the Consolidation Coal Co.'s barges Nos. 6 and 9, bound from Baltimore to Boston with coal, were drowned when their craft foundered near Cape Henlopen and went to pieces in the gale of Apr. 3. These barges were in tow of the tug "Cumberland" and broke adrift early in the day. Despite great efforts the Cumberland's crew was unable to get another line to the barges which drifted for some time, finally going aground, where they broke to pieces and sank with all on board.

**St. Louis, Mo.**—The new \$50,000,000 barge-loading and unloading trestle on the east side of the Mississippi River, opposite Utah St., owned by the Alton & Southern R.R., was opened for business the past week. Several cars of coal can be handled at one time, it being the intention to ship coal south and bring back other cargoes. This coal will come chiefly from the Belleville District on connections of the Alton & Southern. This is the largest barge-loading device on the Mississippi River, with the exception of those at the extreme southern end.

**Pottsville, Penn.**—The Supreme Court recently upheld the Schuylkill County Court in refusing to interfere with the mine inspectors' examining board on charges that it refused a certificate to Thomas Reese, although the records showed that he had answered correctly 90 per cent. of the questions asked him. It was held that the Board of Examiners is not only entitled to but is required to exercise sound discretion in issuing inspectors' certificates. It was pointed out that the powers of the mine inspector are great, his responsibilities enormous, and both lives and property were trusted to his keeping. Therefore, under the act creating the Board of Mine Examiners the duty of that body was judicial and not ministerial alone. The Board is, therefore, justified in using its discretion in the awarding of certificates to inspectors. There were no allegations of fraud or conspiracy on the part of the members of the Board to deprive the plaintiff of his rights.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., APR. 1, 1915, of Coal Age, published weekly at New York, N. Y., required by the Act of August 24, 1912.  
Editor, Floyd W. Parsons, 10th Ave. at 36th St., New York, N. Y.  
Managing Editor, Floyd W. Parsons, 10th Ave. at 36th St., New York, N. Y.  
Business Manager, William Le Baron, 10th Ave. at 36th St., New York, N. Y.  
Publisher, Hill Publishing Company, 10th Ave. at 36th St., New York, N. Y.  
Owner, Hill Publishing Company, 10th Ave. at 36th St., New York, N. Y.

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Known bondholders, mortgagees, and other security holders holding 1 per cent. or more of total amount of bonds, mortgages or other securities. Mortgage on building held by Dime Savings Bank, Brooklyn, N. Y.

C. W. Dibble, Vice-President,  
HILL PUBLISHING COMPANY.  
Sworn to and subscribed before me this 31st day of March, 1915.

RICHARD L. MURPHY,  
Notary Public.  
(My commission expires March 30, 1917.)



# Coal Trade Reviews

## General Review

**Heavy movement of anthracite but the outlook is not encouraging. Bituminous slightly firmer, though purchasers predict a further recession. Some large contracts still open. No improvements in the prospects for the Lake trade.**

The cold weather and storms that marked the beginning of the month served to stimulate activity in the anthracite trade for the time being although it is clear that the pace is slowing down. The industrial depression is causing consumers to hesitate about investing heavily in stocks, and the effects of this are reflected back through the dealer, wholesaler, and up to the operator. Orders are dispatched with greater promptness than is ordinarily obtainable during the lowest price period of the year. Indications point to a dull summer succeeded by an exceedingly active fall trade.

The more conservative of the bituminous interests are becoming unusually cautious about committing themselves on long-term contracts, and the month of April is progressing somewhat better than was anticipated. The tonnage for April is running slightly ahead of the March movement which is a rather unusual condition. On the other hand there are still some large contracts to be closed, and these buyers are expressing every confidence in a general break in the market later. It is also a fact that a number of shipments are being either postponed or canceled on current business, and this extra pressure has developed a receding tendency in prices. The export and bunkering tonnage keep up in excellent shape and it is becoming evident that certain interests are making preparations to place large tonnages permanently in the foreign markets.

It is estimated that less than half the normal amount of contract business in the Pittsburgh district has been closed to date, even with the additional inducement of low prices. There has been a slight increase in the demand on current business, but it is still insufficient to absorb the production with the result that there is considerable free coal on the market. Canadian business is especially light. There has scarcely been any negotiations at all on Lake contracts, and it is evident that the opening will be late and the early movement light. The situation is generally indeterminate although rather mixed.

Much the same conditions prevail in Ohio. There has been some stir in railroad contracts but steam users generally are exceedingly backward about accumulating any stocks and generally content to confine their purchases to the open market, for the time being at least. The colder weather toned up the Middlewestern market on certain grades, but caused no decisive change. The retailers have generally experienced a satisfactory winter, due to the low prices prevailing in the wholesale circles, and also to the reduced cost of labor, and easy deliveries as a result of the mild weather.

## BUSINESS OPINIONS

**Bradstreet's**—Progress in distributive trade, notwithstanding the existence of some retarding factors, speedier operations in industrial lines, large foreign buying of steel, relatively heavy trading in stocks, remarkably heavy exports of wheat, good wheat crop advices, and evidences of a disposition to embark in new enterprises, are the preëminent factors in this week's news.

**Dun's Review**—Domestic trade gains slowly, but war orders and food exports continue very heavy and in all branches of business, and in all sections there is a distinct growth of confidence.

**The Financial Chronicle**—There is substantial reason for the more confident tone that is gradually spreading through trade and financial circles, even though the end of the European war does not yet appear to be in sight.

**Boston News Bureau**—There is no doubt but that every day sees a greater degree of confidence the country over. Improvement in general domestic trade is slow, but unless every sign fails, it will be a feature before many months have passed. People are still extremely cautious, which of

course strengthens the situation. The grain and cotton markets continue strong and active.

**American Wool and Cotton Reporter**—The wool market continues quiet, although a large supply of South American and Australian wools arrived during the week. Less business is being transacted than a few weeks ago but prices remain firm.

**Engineering News**—Returns from building inspectors in 21 cities of the Eastern States show an increase in the contemplated building operations in March of this year compared with the same month last year. While the gain is small the progressive improvement which has continued since the first of the year is highly satisfactory. In the same cities the three months' building operations show a gain of \$7,000,000.

**The Iron and Steel Industry**—Operating to about 70% of capacity, the steel mills are in much better shape regarding orders than on Jan. 1. Recent business has been well above that booked in the first quarter of the year, and while it is estimated that 600,000 tons of pig iron were sold in March, the total sales from merchant furnaces for the first quarter aggregate only 1,000,000 tons. The Steel Corporation is operating at 72% of capacity, and some of the smaller independents are running nearly full. The pig iron movement has eased off slightly in the last ten days, but stocks have been greatly reduced. It is probable that Northern furnaces have 60,000 tons less unsold iron than at the beginning of the year, and the heavy stocks held by Alabama furnaces have been materially reduced. Locomotive works and car builders have both profited by large orders from foreign governments for munitions of war.

## ATLANTIC SEABOARD

### BOSTON

**Slightly firmer attitude toward long-term contracts the only new feature. Pocahontas and New River shippers continue to close small contracts at 1914 basis or less. Georges Creek in excessive supply. Disastrous gale. Anthracite movement seasonable.**

**Bituminous**—While no improvement can be reported in the spot situation the week has developed a somewhat more cautious attitude on the part of Hampton Roads shippers with regard to long-term contracts. Opportunities to name prices for two and three years have been passed over and even on yearly contracts that involve large tonnages there is a disposition to adhere more closely to a remunerative price than has been the case for several weeks. Buyers, on the other hand, are simply waiting for what they call the "inevitable break" later on. In other words, some of the large contracts still open will not be closed until buyers secure the low offerings they count on. Contracts for smaller tonnages continue to be made on last year's figures, or less.

Meanwhile, trade is still very slack. There is no spot business worth mentioning and contractors are inclined to postpone shipments on account of the large stocks. Even cancellations have been made of shipments en route and this has thrown an extra supply on the market inland and prices have receded under the pressure.

There has been little change in Georges Creek. Arrivals here are still in excess of demand and are likely to continue so until output is materially curtailed.

The choicer grades from the Pennsylvania districts are actively competing against Pocahontas and New River and here and there instances are heard of their securing contracts as a result of favorable tests. Buyers are learning to discriminate and there are several good Cambria and Somerset coals that are apparently in this market to stay.

**Water Freights** show no change. Shippers who have barge transportation of their own are chartering now and then on the open market and there is more than a sufficient supply for all current needs.

The storm of Saturday last took heavy toll of the coal fleet. The Philadelphia & Reading Transportation Line lost



three light barges off Cape Cod, and the Consolidation Coal Co. two barges with their crews near Cape Henlopen. The schooner "M. D. Cross" is also reported a total loss near Diamond Shoal.

**Anthracite**—Ample supplies of all sizes at the loading piers assure prompt dispatch to barges as fast as they report and March and April together will probably be a record period for receipts at this end. Dealers are disposed to take on all they can store but when that point is reached it is realized there will be a long dull season. An unusual number of cargoes sent forward by individual shippers are on the market here. No marked concession in price, however, has so far been heard.

Current quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*	\$0.90@1.40	\$1.15@1.60	\$1.67@1.77	
Philadelphia*	2.15@2.65	2.40@2.85	2.92@3.02	
New York*	2.45@2.95	2.70@3.15	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				\$2.50@2.75
Boston†				3.60@3.73
Providence†				3.50@3.78

\* F.o.b.

† On cars.

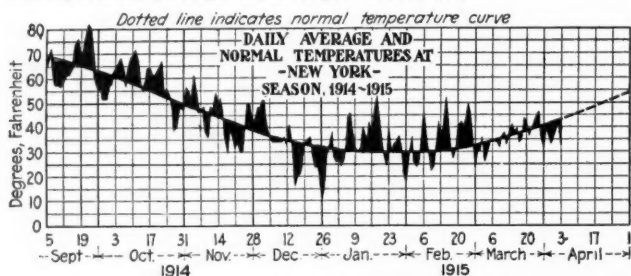
#### NEW YORK

Current bituminous business quiet but there are indications of an improvement. Anthracite shows signs of slowing down. Light output for this month.

**Bituminous**—April business shows indications of being better than during March, which is encouraging in view of the fact that the current month is ordinarily one of the dullest of the year. Coal is being rather closely held at the mines, and the supplies at Tidewater are reduced to a point where a temporary shortage occasionally develops. This has had a tendency to stiffen up prices in the spot market, \$2.25 being the very best that can be done at the moment on western Maryland as compared with some forced sales of Clearfield coal on demurrage at \$2.05 several weeks ago.

The general market continues relatively dull with no indications of any change in sight, although it is not at all likely that the situation through the summer will be any worse than during the past winter. The current month has undoubtedly started off notably better than is ordinarily the case. Bunkering trade is fairly lively. There are reports to the effect that the Berwind-White Co. is assuming a more aggressive attitude; it is commonly understood that they are pounding prices severely on best Miller grades in order to move tonnage and it is also stated that their mines had a full week operations of seven days on special off-shore business that suddenly developed several weeks ago.

Prices on the better grades are somewhat easier, the market now being quotable on the following basis: West Virginia steam, \$2.35@2.55; fair grades, Pennsylvania, \$2.55@2.65; good grades of Pennsylvania, \$2.70@2.80; best Miller Pennsylvania, \$3.05@3.10; Georges Creek, \$3.15.



**Anthracite**—The unexpected cool weather that marked the opening days of the new coal year, proved an additional inducement to buyers and the April business has opened up actively. The demand is generally strong in all directions but close observers believe that the pace cannot be maintained throughout the month. The unsatisfactory conditions in financial circles is either preventing the consumer from stocking at all or making a substantial reduction in his tonnage; this is naturally reflected in the wholesaler's business and so on back to the operator. The indications now are for a rather slack, if not notably dull summer, succeeded by an extremely active fall market, when the situation may even become acute, should there be much severe weather.

The demand so far seems to be about equally distributed among all grades. The individuals are cutting prices on the steam coals, with the result that the companies are finding these sizes exceedingly difficult to move, and considerable is accumulating at some points. Large distributors are showing some anxiety over shipments for the month, which will undoubtedly be very light, because of the numerous

holidays. Practically all the mines shut down on Apr. 1, and were closed until the morning of Apr. 6. Eliminating the Sundays in the month and one or two additional holidays, it has been estimated that the mines will only work 20 full days during the month. With a normal April demand it is doubtful if the requirements could be satisfied on such a curtailed schedule.

The anthracite market is now quotable on the following basis:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	\$4.60	\$4.60	\$4.55	\$4.55
Egg	4.85	4.85	4.80	4.80
Stove	4.85	4.85	4.80	4.80
Chestnut	5.10	5.10	5.05	5.05
Pca.	3.55	3.35@3.55	3.50	3.15@3.50
Buckwheat	2.80	2.60@2.80	2.50@2.75	2.35@2.75
Rice	2.30	2.30@2.40	2.00@2.25	2.10@2.35
Barley	1.80	1.60@1.80	1.75	1.40@1.75

#### BALTIMORE

Storm caused delays and the sinking of coal laden vessels. Bituminous market flat. Exports continue large.

The heavy storm caused much trouble in the coal trade. Shipments by water were delayed, two coal barges owned by the Consolidation Coal Co. went down off the Chesapeake Capes with their crew of ten, communication by telegraph and telephone out of Baltimore was badly crippled, and delivery work Saturday was stopped. All the South and many parts of West Virginia and western Maryland were cut off from wire communication over Saturday and Sunday.

Bituminous conditions remain flat. Low grade Pennsylvania coals were offering around 85 to 95c., and the poorer grades from West Virginia and western Maryland were offering at from 75 to 85c. in many cases. Fair to best coals in all regions were freely offered at \$1.10 to \$1.25, with but few takers. Contracting continues the main feature of the trade; most of the mining centers are apparently anxious to get a larger tonnage covered.

Export business continues good. During March a total of 76,888 tons was exported, according to government figures. This makes a total of nearly a quarter of a million tons for the first quarter of the year.

The following coal charters were announced here the past week:

Vessel	Nationality	To	Rate
<b>Vancouver</b>	British	River Plate	\$9.48
Ruth E. Cobb		Kingston, Jamaica	
<b>Breynton</b>	British	La Plata	9.60
Farringford		Buenos Aires	
Modiva		Guantanamo	
Sowell	British	West Coast Italy	12.00
Rothley	British	Bordeaux	13.80
Camilla	Norwegian	Bocas del Toro	
Josey	Danish	Port Limon	
Astoria	British	Augusta, Sicily	
Competitor	British	River Plate	

Note—Steamers are indicated by bold face type, all others being schooners.

#### PHILADELPHIA

Anthracite continues on about the same basis as last week. Domestic sizes well taken care of but steam grades are inclined to drag. Bituminous trade listless, with occasional favorable reports.

**Anthracite**—After almost a week of holidays, mining operations were resumed the early part of the week, and will doubtless continue on full time for the balance of the month, providing the market will absorb the steam sizes. The lack of facilities to store these small sizes may compel some of the companies to curtail operations as it is understood that they are pretty well filled up, though at the present time, the market is absorbing the output.

It is understood the dealers are placing comparatively few orders for April shipment, stating that they do not expect a heavy demand. They also state they are receiving offers from some of the operators to protect them at the April price until September, and in some cases later. The price of pea coal has been further reduced on a slow market; it is being freely offered at \$2, and while there may be some sales at \$2.25, this is undoubtedly on contracts. Broken size, on full mining, seems to be easier. Egg is short of the market requirements; the opening month of the new coal season invariably finds a shortage in this size, and this year is no exception. Stove is also well taken care of, as well as chestnut.

The Tidewater business to New England continues heavy, barges being loaded as fast as they are returned. Lack of egg coal is seriously handicapping the prompt loading of barges, in some instances, although, as a general rule, there is little or no delay.

Prices at Tidewater rule about as follows:

	Circular	Individuals
Broken	\$4.25	\$4.25
Egg	4.50	4.50
Stove	4.50	4.50@4.60
Nut	4.75	4.60@4.75

## HAMPTON ROADS

**Shipments for the week heavy. Demand increasing. March tonnage reaches a total of 1,073,227 tons.**

Dumpings at all piers during the week have been heavy. Large shipments have gone coastwise to New England ports and the export movement also shows up well. One cargo has been loaded by the Government for San Francisco, amounting to about 6600 tons. The demand seems to be improving for both coastwise and export shipments and while a large percentage of the movement is on contract, a few large spot sales are being made. The largest export shipment was loaded into the steamer "Cristobal" for the Canal Zone and amounted to about 10,000 tons.

As was expected the dumpings for the month of March ran considerably in excess of the February figures, totaling 1,073,223 tons. The Norfolk & Western Ry. from Lamberts Point dumped 516,141 tons, the Chesapeake & Ohio Ry. at Newport News came second with 315,799 tons and the Virginian Ry. from Sewalls Point dumped 241,287 tons. The Norfolk & Western Ry. dumped as much as the Chesapeake & Ohio and Virginian combined.

Vessels clearing from Hampton Roads during the week of March 26 to April 2, 1915, were:

Norfolk			Newport News		
Vessel	Tons	Destination	Vessel	Tons	Destination
<b>Juno</b>	3,000	Barbados	<b>Harald</b>	4500	Bridgetown
<b>Vesuvio</b>	6,000	Italy	<b>Stromboli</b>	7000	Naples
<b>Huayna</b>	1,848	Para	<b>Albergen</b>	2767	Port Au Spain
<b>Salamina</b>	3,988	Buenos Aires	<b>Newton</b>	7250	Cuba
<b>Buckhausen</b>	2,200	Port Au Spain	<b>Iolo</b>	5000	Rio De Janeiro
<b>Cristobal</b>	10,000	Canal Zone			
<b>Maude Palmer</b>	2,457	Para			
<b>Tyskland</b>	2,330	St. Georges			
<b>R. P. Pendleton</b>	1,478	St. Michaels			

Note—Steamers are indicated by **bold face type**, all others being schooners.

## OCEAN FREIGHTS

**Business quiet over Easter holidays. Market erratic and uncertain.**

The Easter holidays have interfered very materially with business.

Early in the week we chartered a number of steamers for export coals, principally to South America, some at \$9.36 to the Plate, and since then a large British boat has been closed by others for a similar voyage at \$9.48 although it was thought that this market would decline rather than advance, as a number of steamers were offering for such business.

To	Rate	To	Rate
Havana.....	\$2 75	Guantanamo.....	\$3.25@3.75
Cardenas or Sagua.....	2 50@2.75	Demerara.....	5.50@6.00
Cienfuegos.....	3 00	Bermuda.....	3.50@4.00
Port au Spain, Trinidad.....	3 75	Vera Cruz.....	3 50
St. Lucia.....	3 50@3.75	Tampico.....	3 50
St. Thomas.....	3 25	Rio.....	10 20
Barbados.....	3 75	Montevideo, Buenos	
Kingston.....	3 00@3.25	Aires or La Plata.....	9 36
Curacao.....	3 50@3.75	Mediterranean*.....	10 80
Santiago.....	3 25@3.75	Valparaiso†.....	8.40@9.60

Note—Rates noted in **bold face type** are only approximate.

\* To a direct port not east of the West coast of Italy, Spain, excluded.

† With 800 tons per day discharge.

W. W. Battie & Co.'s Coal Trade Freight Report.

## OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
<b>Farnham</b>	British	Virginia	Lower River Plate	1934	\$9.36 9.60
<b>Farrington</b>	British	Baltimore	Buenos Aires	1995	
<b>Stanley Dollar</b>	British	Baltimore	Seattle	955	
<b>Modiva</b>	Norwegian	Baltimore	Guantanamo	778	
<b>Astoria</b>	British	Baltimore	Augusta, Sicily	2743	
<b>Sif</b>	Norwegian	Newport News	Fort de France, Martinique	1959	
<b>Josey</b>	Danish	Baltimore	Port Limon	1671	
<b>Mary L. Baxter</b>		Norfolk	Portland	826	
<b>Competitor</b>	British	Atlantic Range	River Plate	2216	
<b>Lewiston</b>		Norfolk	Manaos, Brazil	711	
<b>Ellen Little</b>		Norfolk	Para	807	
<b>Barbara</b>		Norfolk	Bermuda	746	
<b>Ella L. Davenport</b>		Philadelphia	Cardenas	470	

Note—Steamers are indicated by **bold face type**, all others being schooners.

## LAKE MARKETS

## PITTSBURGH

**Demand scarcely increased, and much free coal depressing market. Contracting has been very light. Lake business still in abeyance.**

There has been a slight increase in manufacturing demand, but domestic demand has decreased further and railroad consumption has experienced scarcely any increase. On the

whole the demand is quite insufficient to absorb the present production, and there remains much free coal, which is going at all sorts of prices according to the exigencies of individual cases, \$1 for mine-run not being minimum in isolated cases.

Contracting for the twelvemonth is also unsatisfactory. By this date nearly all the regular contracts should be closed, yet it is doubtful whether one-half the expiring contracts have been signed up again. Many buyers seem to have concluded that as long as free coal can be purchased at considerably lower prices than can be done on contracts it is no time to enter into contracts. The fact that contract prices are about 15c. lower than prevailed a year ago does not seem to be sufficient to bring them in line.

Prospects for the Lake trade continue poor. No contracts are reported as yet, except in isolated instances, and it certainly cannot be said that buying for the Lake trade has commenced. The opening of shipments will be unusually late, and the early movement will be confined to coal produced by the shippers or due on long-term contracts. Contracts for the twelvemonth are supposed to be on the basis of about \$1.15 for mine-run, but the figure seems to have been shaded more often than not in contracts made thus far.

For free coal the regular asking prices, frequently shaded, can be quoted the same as in last report: Slack, 90c.@\$1; nut and slack, 95c.@\$1.05; nut, \$1.05@1.10; mine-run, \$1.05@1.10; ¾-in., \$1.15; 1¼-in., \$1.25, per net ton at mine.

## BUFFALO

**Continued dullness in bituminous trade. Prices show the effect of much competition. Contracts closed at low figures. Anthracite trade has good April orders; movement by Lake will be delayed.**

**Bituminous**—General dullness still prevails in the Buffalo market due largely to the lack of Canadian orders, though Seaboard conditions are also depressed. Business is just about the same as a month ago and very few lines are working at anywhere near normal. The lack of orders is depressing prices and spot shipments are being picked up at figures that show little profit. Operators are continuing their plan of keeping down the output. Contracts are few and show up rather poorly as compared with last year's prices, being quite often 5 to 10c. lower and even occasionally 15 cents.

The opening up of the Lake trade in bituminous may relieve the situation to some extent and cause a resumption of activity, but the outlook is as yet uncertain. There is no demand for early Lake shipments, as a good deal of coal was carried over from last season.

Prices are unchanged and weak at \$2.80 for Pittsburgh lump, \$2.70 for three-quarter, \$2.55 for mine-run and \$2.15 for slack, with Allegheny Valley grades about 25c. lower than Pittsburgh.

**Anthracite**—The amount of April business is less than normal, though one or two companies report that their trade is holding its own as compared with last year. Dealers have been finding their collections running behind and are forced to buy less than usual. The Lake movement of anthracite may not start until about May 1. Ice conditions remain unsuitable for sailing and the weather has been too cool to allow any breaking up of the ice fields, which extend as far west as Toledo. About 30 cargoes are now afloat here.

## COLUMBUS

**Trade is still dull. Lake prospects are not good. Production heavily restricted.**

The market has continued inactive. On the whole it is in bad shape and immediate hopes for improvement are not bright. Prices are still low, although the new Apr. 1 circulars are no lower than current quotations.

The chief activity of the market has been trading in West Virginia fine coal. With the more general use of mechanical stokers and the curtailed production of lump in Ohio, users of the small sizes have been compelled to look to West Virginia for their supply of fuel. As a result prices on these grades are still strong, ranging from 65 to 75c. and in some instances even higher.

Domestic lump is selling only in small orders. Dealers' stocks are apparently sufficient for the future and they are not ordering in any large quantities as they do not wish to carry over any surplus. Retail prices are still at the winter levels, though a reduction is usually made Apr. 1; dealers believed that it would not stimulate the market to make reductions and consequently they are charging the same prices as formerly.

Steam business is quiet in all directions. Some activity has developed in renewing railroad contracts and sales managers have been working along that line. Steam users are not buying any great tonnage, being loath to accumulate stocks. Many of the manufacturers are content to buy in the open market instead of entering into contracts.

Production has been at a low point all week. In most dis-



tricts it is estimated at 25% of normal; in the Pomeroy Bend it has been about one-third of the average.

Uncertainty still prevails in the Lake trade. It is believed that fully 5,000,000 tons of coal have been carried over on the docks of the Northwest and this means a late opening. Practically no bottoms have been chartered as yet because of the uncertainty.

Prices in the Ohio field are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump.....	\$1.45	\$1.50	.....
Inch and a quarter.....	1.30	1.35	\$1.30
Three-quarter inch.....	1.25	1.30	1.25
Nut.....	1.15	1.25	1.15
Mine-run.....	1.05	1.10	1.05
Nut, pea and slack.....	0.65	0.70	0.60
Coarse slack.....	0.55	0.60	0.50

#### CLEVELAND

The spot market is offering bargains and sales are only fair. Retail dealers are taking anthracite, but are not stocking as heavily as usual. Some Lake coal is being made.

The spot market is showing some very good bargains. Pan Handle three-quarter has been sold at \$2 the last week, slack at \$1.70 to \$1.75 and mine-run as low as \$1.80, with a liberal supply to be had at \$1.85. The receipts and left overs Monday totaled 300 cars, half of a normal supply. The coarse coal market is only nominal as buyers are loaded up and selling companies are making prices to suit. There is some Youghiogheny slack on the market with Middle district and Fairmont ample for all needs.

The demand is 5 to 10% stronger than a month ago, but the supply of coal still exceeds the demand.

Anthracite here amounts to 500 to 600 cars. The larger retailers are taking all they can store as the April price is the lowest of the year. Some of the smaller dealers are not in position to dock much hard coal, and as the total consumption in this city is only 100,000 to 125,000 tons the shipments never are very large.

**Lake Trade**—A few Youghiogheny operators are making Lake coal. Cambridge district is shipping some though not in cargo lots. The outlook for Lake trade does not change, and operators are looking forward to very little business until well into June or July 1. What little Lake coal is being made is also producing slack and accounts for Youghiogheny being shipped into Cleveland with prices as low as they are.

A few ships will sail when navigation opens, Apr. 15, but by May 1 not more than 150 of the 450 bulk freight carriers will be in operation. Unless the shipping business materially changes from the present prospects, it will be late in the summer before many boats will be put in commission. The selling price of iron ore has not been established, and no sales have been reported subject to the 1915 price. The total business for the coming season has been estimated at 40,000,000 tons as compared with 32,000,000 tons in 1914.

Quotations on coal for shipment are:

	Pocahontas	Youghiogheny	Bergholz	Fairmont	W. Va. No. 8
Lump.....	\$2.95				
Lump, 1 in.....		2.20@2.25	2.00	\$1.90	\$1.90@2.00
Egg.....	2.95				
Mine run.....	2.45@2.50	2.10	1.90	1.80	1.75@1.90
Slack.....		1.80	1.75	1.70	

#### CINCINNATI

Lack of domestic demand affects the market. Scarcity of screenings and a surplus of prepared grades and mine-run. Producing conditions are excellent.

Relatively cool weather has benefited the retailers to some extent, but now that winter is over they will not replenish their supplies. Moreover, the Lake movement is not due to open up for some time, even under normal conditions, and the present season bids fair to be very backward. The demand for domestic coal, which has kept the market stiff for nut and slack has ceased; very little is being produced, and that is made only at the expense of the prepared grades, which have to be sacrificed. The resulting tendency is to market straight mine-run, of which there is a plentiful supply. Good nut-and-slack is worth more than mine-run of a corresponding grade.

Hopes of an industrial revival are still expressed, though without much foundation. The railroads refuse to enter the market to any great extent. The Lake movement is expected to relieve things appreciably, when it begins, but hold-over stocks are large, and the movement may be sluggish.

#### LOUISVILLE

Inclement weather stimulates domestic consumption slightly. Operations still curtailed and prices low.

The expected improvement in the demand has not developed and prospects for the future are indefinite. Continuation of the cold, raw weather, past the usual period, is causing a moderate demand for domestic coals, though there is

not enough of this business to keep the mines going. Very few are running full time and the rule is from two to four days a week, depending largely on the grade of coal produced.

Prices are practically unchanged, with the best classes of block coals ranging in the neighborhood of \$1.35 and \$1.40, egg coals at from \$1.15 to \$1.25, for 2x4-in. and with the best grades of nut and slack firm at around 70c. There are some price cutters who are going considerably below these figures but these are the nominal quotations.

#### BIRMINGHAM

Market quiet, with prices low. Steam grades the best.

Business on lump coal seems to be at an absolute standstill, with only a few cars moving; prices are at least 50c. per ton less than the average for this period, and even then, dealers are not stocking much. Steam coal, while in a slightly better condition than lump, is far from satisfactory, though the prices are holding up well under the circumstances.

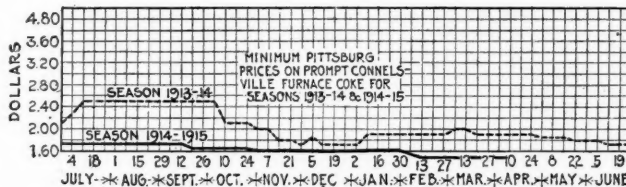
### COKE

#### CONNELLSVILLE

Demand for merchant coke very light. Prices unchanged. Production and shipments slightly increased.

The merchant coke market has been practically without incident in the past week. Here and there tentative inquiries appear for furnace coke but nothing of importance has been closed. Practically all the coke needed to operate furnaces now in blast is provided, and any further activity in merchant coke must depend upon idle furnaces going into blast, something that will hardly occur until there is more activity in the pig iron market. Nothing appears to have been done in the matter of the Pittsburgh Steel Co.'s inquiry for about 20,000 tons of coke a month for the twelvemonth beginning July 1. The market is quotable about as follows: Prompt furnace, \$1.50@1.60; contract furnace, to July 1, \$1.60@1.65; contract furnace to Dec. 31, \$1.75; prompt foundry, \$2@2.35; contract foundry (nominal) \$2.10@2.30, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Mar. 27 at 285,237 tons, an increase of 5795 tons, and shipments at 284,713 tons, an increase of 3328 tons.



**Buffalo**—No improvement in the coke market is visible, although reports are received from the ovens of a stiffer market. The same dullness prevails here as for several months. Prices are low and unchanged at \$4.25 for best 72-hr. Connellsville foundry and \$3.30 for stock coke.

**Chicago**—The demand for furnace and foundry coke has slightly improved, with prices the same as last week. More inquiries are being received for domestic coke, and it is felt that the retailers will soon commence to store domestic sizes. Quotations are as follows: Byproduct, \$4.45@4.75; Connellsville, \$4.65@4.80; Wise County 72-hr. (select), \$4.50@4.75; gas coke, \$4@4.10; furnace, \$4.40@4.65.

### MIDDLE WESTERN

#### CHICAGO

General situation apathetic. Buyers holding off on contracts. Screenings slightly easier. Eastern coals dull.

Slightly colder weather has toned up the demand for some of the Eastern coals in this territory, but it has not caused any decisive change in the situation. Contract business still drags, and it is quite apparent that manufacturing and industrial purchasers are inclined to wait for later developments. Some quotations are being obtained apparently more for comparative purposes with those found in the open markets than with the desire to close. It is clear that some industrial plants are going to take their chances on buying next season in the open market.



Very little activity has been displayed in Hocking coals. A few sales have been made below list, but apparently there is no spot coal on track or in transit.

Prices on eastern Kentucky grades are still demoralized. Some of the Kentucky companies have been crushing mine-run and the coarser sizes in order to supply the steam demand. Eastern Kentucky operators make little progress in placing tonnage of any moment in this territory at the present time.

Improvement is shown in the smokeless situation, and some of this coal is being stored by the retailers. Very little contracting has been done. Splint coals have been rather active, but there has been some consignment coal sold at sacrifice prices. Towards the end of the week, prices were a little firmer after the surplus coal had been eliminated.

A new circular covering Franklin County lump, egg and nut has been issued at \$1.35. The Franklin County operators are still maintaining prices, and restricting production in accordance with the demand. Slightly increased orders resulted from the cold snap recently. Some of the Williamson County operators have been crushing the coarser sizes to meet the steam demand. Screenings from southern Illinois mines are still active, and in good demand at the prices of last week.

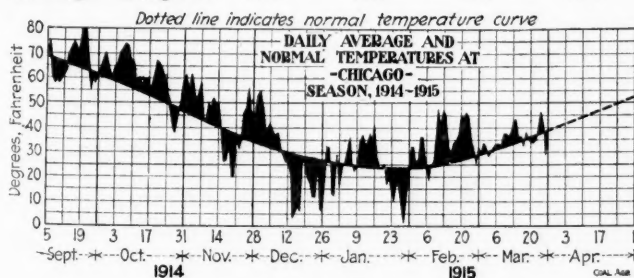
The weather in Indiana has been against retail sales, so that the operators have only been called upon to ship enough tonnage to meet contract requirements, which are at the minimum. The demand from all sources for Indiana coal is below normal for this season of the year. Prices remain about the same as last week but the supply of screenings is hardly equal to the demand. Some of the operators are considering seriously the question of crushing mine-run for steam use.

In the Springfield District the railroad demand is still very light and few railroad contracts have been renewed. Screenings are about on a parity with last week's prices. Domestic orders have been light. Prevailing quotations are as follows:

	Williamson and Franklin Cos.	Springfield	Sullivan	Clinton	Cartersville
Lump.....	\$1.20@1.35	\$1.25@1.35	\$1.25@1.40	\$1.20@1.30	\$1.50@1.75
4-in. lump.....				1.15@1.25	
Steam lump.....					
2½-in. lump.....			1.20@1.35		
1½-in. lump.....			1.15@1.25		
Mine-run.....	1.10	1.05	1.00@1.10	1.00@1.10	
Egg.....	1.20@1.35	1.25@1.35	1.15@1.35	1.15@1.30	
No. 1 washed.....	1.20@1.35				1.25@1.50
No. 2 washed.....	1.20@1.35				1.25@1.40
6x3-in. egg.....					1.30@1.65
Nut.....		1.15@1.25	1.15@1.25	1.10@1.20	
No. 1 nut.....	1.20@1.35				
No. 2 nut.....	1.20@1.25				
Screenings.....	0.85@0.95	0.75@0.85	0.75@0.85	0.75@0.90	0.80@0.85

	Saline Co.	E. Kentucky	N. Riv. & Poca.	Somerses	Hocking
Lump.....	\$1.15@1.35	\$1.15@1.40	\$1.50@1.60	\$1.60	
4-in. lump.....		1.10@1.35			\$1.20@1.30
Mine-run.....	1.05@1.10		1.00@1.25	1.00@1.15	1.00@1.15
Egg.....	1.10@1.25	1.00@1.10	1.40@1.60	1.50@1.60	
No. 1 nut.....					
No. 2 nut.....					
Screenings.....	0.80@0.90				



## ST. LOUIS

Larger tonnage moving but prices are low. Conditions generally unsatisfactory.

The tonnage moving is better than for the past week or two. The continued cool weather stimulated the demand for the domestic coals and this kept the market in a fairly healthy condition. Prices, however, are as low as they can go, and there is no chance at all of any improvement now for several months, unless it be with the steam sizes. Manufacturing conditions in the St. Louis territory are depressed, and there is nothing to indicate that the demand for steam coal will be great enough to cause any record breaking prices this season, which means that such operations as may continue will have an extremely difficult time in making expenses.

Anthracyte threatens to be slow during April and May, and the greatest tonnage this year is likely to move in during June and July. Smokeless is a dead issue.

There was no change the first of April in the retail coal prices in St. Louis.

## INDIANAPOLIS

Weather still cool enough to keep up a fair demand for domestic lump. Screenings sell readily. Mines making about four days a week. Contract season opening fairly good.

The nights are cold so that coal fires are kept going and fair trade continues in domestic lump. This helps retailers to clean up stocks but is not benefiting the mines appreciably. However, operators are better able to meet the call for screenings, which are commanding relatively the best price, at 85 to 90c. Mine-run No. 4 is selling at \$1.10 to \$1.20. Mines are making about four days a week.

The contract season has opened fairly good. It had been predicted in some quarters that there would be some hesitation in making or renewing contracts, but operators say they are being signed up about as usual. The retail yards have not yet made the cut in prices that usually follows the close of winter. The factory demand is improving slowly if at all.

## PRODUCTION AND TRANSPORTATION STATISTICS

## IMPORTS AND EXPORTS

The following is a comparative statement of imports and exports of the United States for January, 1914-15, and for the seven months ending January, 1913-14-15, in long tons:

	Seven Months		January	
	1913	1914	1915	1915
Imports from:				
United Kingdom.....	7,218	4,913	21,112	2,120
Canada.....	843,962	579,071	639,686	84,092
Japan.....	30,004	74,306	58,287	11,385
Australia and Tasmania.....	98,308	141,284	120,219	14,626
Other countries.....	448	1,967	1,323	80
Total.....	979,940	801,541	840,627	112,303
Exports:				
Anthracite.....				
Canada.....	2,812,753	2,242,101	2,109,323	191,968
Brazil.....			6	
Uruguay.....		84		
Other countries.....	50,358	41,677	38,547	5,447
Total.....	2,863,111	2,283,862	2,147,876	197,415
Bituminous:				
Canada.....	7,002,875	8,516,274	6,005,140	563,848
Panama.....	269,759	241,054	144,219	30,075
Mexico.....	155,216	182,973	252,138	38,373
Cuba.....	706,776	685,759	595,329	94,499
West Indies.....	329,436	337,271	253,390	72,737
Argentina.....		52,801	151,419	10,480
Brazil.....		170,521	201,483	27,357
Uruguay.....		16,858	30,494	7,259
Other countries.....	563,114	675,118	1,051,287	86,391
Total.....	9,027,176	10,878,629	8,684,898	923,760
Bunker coal.....	4,230,690	4,575,059	3,949,914	607,652

## VIRGINIAN RAILWAY

Shipments over this road for January of the current year amounted to 344,139 short tons as compared with 276,015 during the preceding month.

## FOREIGN MARKETS

## GREAT BRITAIN

Mar. 26—Values are strong for all descriptions. Outputs are very short and stemming difficult of arrangement for April positions. Quotations are approximately as follows:

Best Welsh steam.....	Nominal	Best Monmouthshires....	\$7.80@7.92
Best seconds.....	\$8.16@8.40	Seconds.....	7.56@7.80
Seconds.....	7.68@7.92	Best Cardiff smalls.....	4.92@5.05
Best dry coals.....	7.68@7.92	Cargo smalls.....	4.32@4.44

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Chartering is still quiet owing to stemming difficulties. Rates are easy for prompt and steady for forward positions. The following are approximately the current values:

Gibraltar.....	\$4.08	Naples.....	\$4.56	Las Palmas.....	\$3.60
Malta.....		Venice, Ancona.....	9.60	St. Vincent.....	4.80
Marseilles.....	5.02	Alexandria.....	6.24	Rio Janeiro.....	5.52
Algiers.....	4.63	Port Said.....	6.00	Monte Video.....	5.76
Genoa.....	4.56			River Plate.....	6.00

Note—These quotations are based on an exchange rate of 24c. to one shilling.

## Coal Contracts Pending

*Contracts listed in this department are authoritative in every respect except where the source of information is questionable, in which event it is noted. All contracts are listed promptly on receipt and only repeated when additional information becomes available or in the last issue previous to the day on which bids will be closed. Liberal remuneration will be paid for all legitimate notices of this kind sent in.*

†Indicates contracts regarding which official information has been received.

†No. 220—**Richmond, Va.**—Bids will be received until 2 p.m., Apr. 14, for furnishing the U. S. Post Office with 400 tons of bituminous coal (p. 446). Address Custodian H. T. Thornton, U. S. Post Office, Richmond, Va.

†No. 221—**Columbus, Ohio**—Bids will be received until 2 p.m., Apr. 14, for furnishing the U. S. Post Office with 700 tons of bituminous coal (p. 446). Address Custodian S. A. Kinnear, U. S. Post Office, Columbus, Ohio.

†No. 262—**St. Louis, Mo.**—Bids will be received until Apr. 14 for furnishing and delivering 360 tons of bituminous coal to the Federal Building (p. 447). Address Custodian Fountain Lorthwell, Federal Bldg., St. Louis, Mo.

†No. 292—**West Point, N. Y.**—Sealed proposals in triplicate will be received until noon, Apr. 15, for furnishing and delivering charcoal, smithing and gas coal, as required at this post for the fiscal year 1916 (p. 487). Address Depot Quartermaster Maj. E. J. Timberlake, West Point, N. Y.

†No. 363—**Toledo, Ohio**—Bids on this contract, which provides for furnishing 10,000 tons of bituminous and 5000 tons of anthracite coal to the local water-works (p. 566), were as follows, per ton:

BIG FOUR COAL CO.—High Service Station, 14,850 B.t.u., \$2.05; 13,700 B.t.u., \$1.90; 14,445 B.t.u., \$2.05; 14,662 B.t.u., \$2.10. Low Service, Dorothy Nut, \$2.30; 13,800 B.t.u., \$2.25.

A. G. BLAIR CO.—High-Service Station, Dorothy 2-in. nut and slack, \$2.

CENTRAL STATES COAL CO.—High-Service Station, Dorothy 2-in. nut and slack, \$2.05; Winifrede washed pea coal, \$2.15. Low-Service Station, 14,750 B.t.u., \$2.15.

W. A. GOSLINE CO.—High-Service Station, 12,761 B.t.u., \$1.625; 14,312 B.t.u., \$1.925; 13,326 B.t.u., \$1.83. Low-Service Station, Hocking washed pea, 3x1¼-in. nut, \$2.05; Ethel Logan, W. Va., 2x¾-in. nut, \$2.19.

JEWETT, BIGELOW & BROOKS—High-Service Station, 13,500 to 13,600 B.t.u., \$1.90; 13,300 B.t.u., \$1.83.

GEORGE M. JONES CO.—High-Service Station, 12,523 B.t.u., \$1.60. Low-Service Station, 13,514 B.t.u., \$2.25.

PETER KOENIG COAL CO.—High-Service Station, 14,000 B.t.u., \$2.10.

MANCOURT-WINTERS CO.—High-Service Station, 14,000 B.t.u., \$1.95. Low-Service Station, 14,000 B.t.u., \$2.35.

NEW RIVER & OHIO COAL CO.—High-Service Station, 14,000 B.t.u., \$2.10; 13,500 B.t.u., \$1.89. Low-Service Station, Coal Valley nut, \$2.15.

OHIO & KENTUCKY COAL CO.—High-Service Station, Dorothy nut, pea and slack, \$2.05; 13,188 B.t.u., \$1.85. Low-Service Station, Dorothy nut, \$2.35; 14,216 B.t.u., \$2.35; 14,352 B.t.u., \$2.50.

JOHN T. SOLON—High-Service Station, 14,443 B.t.u., \$1.80. Low-Service Station, 12,086 B.t.u., \$2.05.

WEST VIRGINIA POCAHONTAS SALES CORPORATION—High-Service Station, 14,300 B.t.u., \$1.95. Low-Service Station, Panther nut and slack, \$1.95.

W. H. WARNER COAL CO.—High-Service Station, 12,500 B.t.u., \$1.54.

WEST CRESCENT FUEL CO.—High-Service Station, 14,100 B.t.u., \$1.90; 11,250 B.t.u., \$1.70; 14,250 B.t.u., \$2.03; 14,100 B.t.u., \$2. Low-Service Station, 14,100 B.t.u., \$2.40; 13,560 B.t.u., \$2.05. Address Supt. G. A. Gessner, Jr., City Water Department, Toledo, Ohio.

†No. 367—**Dunkirk, N. Y.**—Bids will be received until Apr. 13 for furnishing the Board of Water Commissioners with coal for the ensuing year (p. 566). Address Secy. Baumgartner, Board of Water Commissioners, Dunkirk, N. Y.

†No. 382—**New York, N. Y.**—Bids on this contract (p. 567), which provides for furnishing 1200 gross tons of No. 3 buckwheat coal and 400 tons semibituminous mine-run coal, at Amsterdam Ave. and 139th St., were as follows:

Bidders	Buckwheat	Semibituminous
C. D. Norton.....	\$2.36	\$3.34
J. W. Peale.....	2.39	3.41
Pattison & Bowns .....	2.53	3.43

Address Curator R. V. Davis, Room 114 Main Building, 139th St. and Convent Ave., New York.

†No. 383—**New York, N. Y.**—The bidders on this contract (p. 567), which provides for furnishing and delivering coal to Bellevue and Allied Hospitals, Departments of Correction, Fire, Public Charities, Parks, Bronx and Queens Parks, were as follows: T. R. Thorn, J. E. Donovan, A. J. J. McCullum, S. Trimmer & Sons, Wm. Brennen, Jos. Johnson's Sons, Pattison & Bowns, C. D. Norton, Bacon Coal Co., Burns Bros., A. D. Dreyer, E. Nichols & Co., G. D. Harris, C. Vanderbilt, S. Hore, Jamieson & Bond, Shrader Coal Co., J. F. Schmadeke, Gavin Rowe, M. L. Bird, J. W. Peale, William Farrell, Jergen Rathgen, Parksburg Coal Co., O. J. Stephens, J. E. Becker, Meyer, Denker & Sinram, J. S. Conabeer. Address Contract Clerk, Room 1226 Municipal Bldg., New York.

†No. 395—**Chicago, Ill.**—Bids will be received until 11 a.m., Apr. 15, for furnishing coal required at the posts of the Central Department during the fiscal year commencing July 1 (p. 567). Address the Depot Quartermaster, 566 Federal Building, Chicago, Ill.

†No. 396—**National Soldiers' Home, Va.**—Sealed proposals will be received until 1:30 p.m., Apr. 16, for furnishing 10,000 tons of bituminous coal to the Southern Branch N. H. D. V. S. National Soldiers' Home (p. 567). Address Treas. S. E. Skinner, National Soldiers' Home, Va.

†No. 413—**Albany, N. Y.**—Sealed proposals will be received until 10 a.m., Apr. 20, for furnishing and delivering the following:

No. 1—About 10,000 tons of No. 1 buckwheat anthracite and 2500 tons of bituminous slack coal at the State Power House.

No. 2—About 600 tons of grate and 50 tons of stove or chestnut to the State Hall, at the Agricultural and Geological Hall and the Executive Mansion. Address Supt. of Pub. Bldgs. William H. Storrs, Capitol, Albany, N. Y.

†No. 422—**Buffalo, N. Y.**—Bids on this contract (p. 568), which provides for furnishing and delivering about 500 tons of coal at the various bridges in the city, were as follows:

C. A. & M. KEISER—For grate size: April, \$5.45; May, \$5.55; June, \$5.65; July, \$5.75; August, \$5.85; September to Mar. 31, 1916, \$5.95.

BUFFALO FUEL CO.—Grate size: April, \$5.47; May, \$5.57; June, \$5.67; July, \$5.77; August, \$5.87; September to Mar. 31, 1916, \$5.97.

Address Asst. Engr. Frank E. Jackson, Bureau of Engineering, Municipal Building, Buffalo, N. Y.

†No. 437—**Boston, Mass.**—Sealed proposals will be received until 2 p.m., Apr. 14, for furnishing coal to the Post Office and Sub-Treasury Building during the fiscal year ending June 30, 1916 (p. 627). Address Custodian William F. Murray, U. S. Post Office and Sub-Treasury, Boston, Mass.

†No. 439—**Fort Sam Houston, Tex.**—Sealed proposals will be received until 11 a.m., Apr. 15, for furnishing coal to the Southern Department posts during the fiscal year commencing July 1, 1915 (p. 627). Address Depot Quartermaster G. S. Bingham, Fort Sam Houston, Tex.

†No. 448—**Springfield, Mass.**—Sealed proposals will be received until 10 a.m., Apr. 15, for furnishing coal to the armory for the fiscal year commencing July 1, 1915 (p. 627). Address Depot Quartermaster, Springfield Armory, Springfield, Mass.

†No. 451—**Chicago, Ill.**—The American Sand & Gravel Co. will purchase throughout the coming year about 100 cars of Illinois or Indiana lump coal. The first purchase will be made about Apr. 15 (p. 627). Address Gen. Mgr. Fisher, American Sand & Gravel Co., Chicago, Ill.

†No. 452—**San Francisco, Calif.**—Sealed proposals will be received until 10 a.m., Apr. 15, for furnishing bituminous mine-run coal for the army transports and for the National Cemetery and Recruiting Office (p. 627). Address Depot Quartermaster Lieut.-Col. W. H. Hart, 1086 North Point St., San Francisco, Calif.

†No. 466—**Reading, Penn.**—Sealed proposals will be received until 10 a.m., Apr. 14, for furnishing coal to the Berks



County Prison (p. 628). Address County Controller D. K. Hoch, County Controller's Office, Reading, Penn.

†No. 475—Rock Island, Ill.—Sealed proposals will be received until 11 a.m., Apr. 15, for furnishing fuel to the Arsenal for the fiscal year commencing July 1 (p. 628). Address Lieut.-Col. Kenneth Morton, Rock Island Arsenal, Ill.

#### NEW BUSINESS

†No. 486—Boston, Mass.—Bids will be received some time during May for furnishing the various state institutions of the Board of Insanity with a year's supply of coal. The quantities involved and the price per ton of last year's supply were as follows:

Institution	Tons	Price	Delivery
Worcester Hospital	5500	\$4.55	In bins
Taunton Hospital	2500	4.18	At siding or trestle
Northampton Hospital	2000	4.15	At siding or trestle
Danvers Hospital	6500	3.64	F.o.b. Salem
Westboro Hospital	4750	3.53	F.o.b. Providence
Boston Hospital (Main)	6000	4.95	In bins
Boston Hospital (Psychopathic)	1500	4.92	In bins
Worcester Asylum	1600	4.10	At siding or trestle
Medfield Asylum	6000	4.28	At siding or trestle
Gardner Colony	800	4.35	At siding or trestle
Monson Hospital	4000	4.20	At siding or trestle
Foxboro Hospital	1300	4.38	At siding or trestle
Waverley (Mass. School for Feeble-Minded)	3000	4.05	F.o.b. Mystic Wharf
Wrentham	1500	4.28	Railroad station

Address Financial Agt. E. R. Libby, Room 6, State House, Boston, Mass.

†No. 487—Reading, Ohio—The Municipal Water Works & Electric Light Plant will be in the market about May 1 for 2000 tons of New River smokeless mine-run coal, the present contract being closed at \$2.55 per ton. Address Supt. Barrett A. Burns, Municipal Water Works & Electric Light Plant, Reading, Ohio.

No. 488—Hartwell, Ga.—The Franklin Light & Power Co. of this place will be in the market about May 1 for 1500 tons of Brushy Mountain screened coal, the present contract being closed at \$3.40, delivered. Address Mgr. Albert L. Couch, Franklin Light & Power Co., Hartwell, Ga.

†No. 489—Staples, Minn.—The Municipal Electric Light Plant here will be in the market about May 1 for 2000 tons of Youghiogheny screenings. The present contract was closed at \$3.25 per ton. Address Supt. John Effinger, Municipal Electric Light Plant, Staples, Minn.

No. 490—Chicago, Ill.—The Armstrong Paint & Varnish Co. will contract for a year's supply of No. 5 washed Illinois or Indiana coal. The contract calls for about 18 carloads. Address Purchasing Agent, Armstrong Paint & Varnish Co., Chicago, Ill.

No. 491—Alexandria, Minn.—The Board of Public Works at this place will be in the market about May 1 for 1500 to 1800 tons of Elkhorn and Youghiogheny screenings. The present contract was closed at \$3.75 per ton. Address Chief Clerk, Board of Public Works, Alexandria, Minn.

†No. 492—New Orleans, La.—Sealed proposals will be received until 11 a.m., May 1, for furnishing coal for the United States plant from July 1, 1915, to June 30, 1916. Address Maj. Edward H. Schulz, Room 325, Custom House, New Orleans, La.

No. 493—Yonkers, N. Y.—Bids are requested for furnishing approximately 400 tons of coal to be delivered at various apartments. Address J. Romaine Brown & Co., Real Estate Agents, 506 South Broadway, Yonkers, N. Y.

No. 494—Madison, Ill.—The Barber Asphalt Co. of this place usually contracts during April for a supply of standard 2-in. lump coal. The company consumes from 12 to 15 cars per month. Address Purchasing Agent, Barber Asphalt Co., Madison, Ill.

†No. 495—Paterson, N. J.—Bids will be received about May 1 for furnishing 4000 tons of anthracite coal in pea, stove and egg sizes. The present contract was closed as follows: Pea, \$4.30; stove, \$5.60 to \$6.10; egg, \$5.60 to \$6.10. Address Secy. James F. Dunphey, Board of Education, Room 24, City Hall, Paterson, N. J.

†No. 496—Malden, Mass.—The Board of Education will contract about May 1 for 1600 tons of anthracite egg coal and 700 tons of bituminous New River coal. The present contract was closed at \$5.80 for anthracite and \$4.68 for bituminous. Address the Fuel Committee, High School Bldg., Malden, Mass.

†No. 497—Richmond, Va.—The local city government will be in the market during May for its annual requirements of coal, which amounts to about 250 tons of anthracite, and 2000 tons of steam coal. On last year's purchase, the anthracite was bought at \$6.33 per ton, and the steam coal at \$3.39 per ton, delivered in the cellar and weighed on city scales. The best New River mine-run steam coal and Pennsylvania anthracite are used. The call for bids is advertised. Address Clk.

and Superv. C. P. Walford, Committee on Buildings and Furniture, School Board, Richmond, Va.

†No. 498—Grafton, N. D.—The local City Light & Water Plant will contract on the first Monday in May for its annual requirements of coal involving about 550 tons of screened lump Youghiogheny. The business is let on a competitive basis, and last year brought \$5.90 per ton, delivered in the bin. Address Supt. Karl H. Smith, City Light & Water Plant, Grafton, N. D.

No. 499—Chicago, Ill.—Birk Bros. Brewing Co. will purchase 500 tons per month of Illinois or Indiana mine-run. They will be in the market about May 1 for one month's supply, and will make subsequent purchases the first of each succeeding month throughout the year. Address, Purchasing Agent, Birk Bros. Brewing Co., Chicago, Ill.

No. 500—Louisville, Ky.—The Christ Brewing Co. will contract this month for a year's supply of nut and slack. The company usually consumes three or more car loads a month. Delivery to be by rail on L. & N. terminal. Address J. B. Rapier, Christ Brewing Co., 318 Baxter Ave., Louisville, Ky.

†No. 501—Sullivan, Ill.—The local City Government will contract for its annual requirements of coal about May 9. Last year 1200 tons of mine-run coal were purchased at \$1.75 delivered in the power house. The business is let on competitive bids. Address Supt. Hugh Hoke, Sullivan, Ill.

†No. 502—Perry, Okla.—The local Water & Light Dept. will be in the market during May for about 1100 tons of bituminous coal. Slack is used almost exclusively, and the average price for all the requirements is about \$2.20. The business is let on competitive bids. Address Supt. J. G. Cronin, Water & Light Department, Perry, Okla.

†No. 503—Evanston, Ill.—The local City Government usually contracts for its annual requirements of coal during May. About 1400 tons of both bituminous and anthracite are required and the purchase is made on a B.t.u. basis. The prices at which the business was concluded last year were: Pocahontas, \$4.50; anthracite, \$7.45. Bids are solicited from all the local dealers. Address the Board of Education, Haven High School, Evanston, Ill.

†No. 504—Dover, N. J.—Sealed proposals in triplicate will be received until 1 p.m., Apr. 26, for furnishing and delivering about 8000 tons of bituminous slack or mine-run coal at the Picatinny Arsenal on the Wharton & Northern R.R. Address the Commanding Officer, Picatinny Arsenal, Dover, N. J.

No. 505—Louisville, Ky.—The Finzer Tobacco Co., which usually consumes about 225 tons of nut and slack coal a year, will contract May 1 for a year's supply. Delivery by wagon as instructed. Address Purchasing Agent, Finzer Tobacco Co., 4019 Finzer Ave., Louisville, Ky.

No. 506—Chicago, Ill.—The Barrett Mfg. Co. will be in the market about Apr. 15 for 20,000 tons Illinois screenings. Contract for one year. Address Purchasing Agent, Barrett Mfg. Co., Chicago, Ill.

†No. 507—Allentown, Penn.—The Board of Education at this place will be in the market during May for its annual requirements of coal, which involves from 1600 to 1800 tons of pea, the price last year being \$4.25 per ton. The call for bids is always advertised. Address Board of Directors, 540 North Sixth St., Allentown, Penn.

†No. 508—Philadelphia, Penn.—The Board of Education here will be in the market during May for its annual requirements of coal, bids for which are advertised in three papers for three weeks. The tonnage involved aggregates approximately 4500 tons of the best Lehigh or Schuylkill egg, stove, nut, pea and rice coal, prices ranging from \$3.28 to \$7.15 per ton last year. About 13,000 tons are bought under the B.t.u. system and the balance on specifications. Address Superintendent of Supplies, Board of Public Education, Room 392 City Hall, Philadelphia, Penn.

†No. 509—Chelsea, Mass.—The local city government will be in the market during May for its annual requirements of coal which aggregate about 1700 tons. The grades bought last year together with prices were: Broken \$5.87, soft \$4.40, egg coal \$6.48. Address Superintendent of Public Buildings, City Hall, Chelsea, Mass.

No. 510—Chicago, Ill.—Darling & Co. is now in the market for two cars per day of Illinois or Indiana screenings. Contract for one year.

†No. 511—National Military Home, Ohio—Sealed proposals will be received at the office of the Treasurer, Central Branch, N. H. D. V. S., National Military Home, Ohio, for furnishing and delivering coal supplies. Specifications and blank proposals can be had upon application to the Treasurer. Bids close at 1 p.m., May 1, 1915. Address Treasurer W. H. Ortt, National Military Home, Ohio.



**No. 512—Chicago, Ill.**—The Barber Asphalt Paving Co. will be in the market about Apr. 25 for one car per day of southern Illinois screenings. Contract will run for one year. Address, Purchasing Agent, Barber Asphalt Paving Co., Chicago, Ill.

**+No. 513—Pawnee, Okla.**—The local city government contracts for its coal requirements during May. About 1500 tons of slack and mine-run coal is required and the customary price is \$1.55 per ton. It is let on competitive bids. Address Clk. H. A. Beproul, Pawnee, Okla.

**+No. 514—Springfield, Ill.**—The local School Board will soon contract for its annual requirements of coal. During the season 1913-1914, the requirements covered 75,202 bu. of mine-run coal, for which \$1.54 was paid, and 29,691 bu. of pea coal at \$1.44; the respective prices for 1914-1915 were, mine-run, \$1.74, and pea, \$1.54. The call for bids is advertised and the business is let on the recommendation of the Committee on Supplies, approved by the Board. Address Committee on Supplies, Leland Office Bldg., sixth floor, Springfield, Ill.

**+No. 515—Elmira, N. Y.**—The Board of Education at this place will be in the market during May for its annual requirements of coal. The last purchase involved 687 tons of anthracite and 1167 tons of bituminous coal, the former costing \$6 per ton and the latter \$3.25 per ton. Address Board of Education, Elmira, N. Y.

**+No. 516—Milledgeville, Ga.**—Sealed proposals will be received until 10 a.m., Apr. 28, for furnishing about 10,000 tons of mine-run steam coal to the Georgia State Sanitarium. Delivery is to be made as required at sanitarium, on Milledgeville R.R. or Central of Georgia R.R. and at water-works pumping station. Address Steward L. J. Lamar, Georgia State Sanitarium, Milledgeville, Ga.

**No. 517—Louisville, Ky.**—The Jefferson Realty Co., which consumes about four tons of pea and slack a day, will contract on Apr. 10 for a year's supply of this coal at a cost not to exceed \$1.50 per ton. Delivery by wagon. Address W. C. Dabney, Jefferson Realty Co., Paul Jones Bldg., Louisville, Ky.

**No. 518—Chicago, Ill.**—The Bowman Dairy Co. will be in the market about Apr. 15 for one year's contract for 30 cars per month of southern Illinois screenings. Address Pur. Agt. D. B. Peck, Bowman Dairy Co., Chicago, Ill.

**+No. 519—Seattle, Wash.**—Sealed proposals will be received until 11 a.m., Apr. 26, for furnishing bituminous fuel and steam coal as required by the Quartermaster Corps at Seattle and Tacoma, during the year 1916. Address Col. George B. Davis, Depot Quartermaster's Office, Seattle, Wash.

**+No. 520—Jeffersonville, Ind.**—Sealed proposals will be received until 10 a.m., Apr. 21, for furnishing the Depot of the Quartermaster's Corps with such quantities of bituminous coal as may be required during the period commencing July 1, 1915, and ending June 30, 1916. Address Depot Quartermaster Maj. Joseph T. Davidson, Jeffersonville, Ind.

**+No. 521—Front Royal, Va.**—Sealed proposals in triplicate will be received until 2 p.m., Apr. 21, for furnishing about 345 tons of anthracite coal to the Front Royal Remount Depot. Address Depot Quartermaster, Front Royal, Va.

**+No. 522—Lorain, Ohio.**—Bids will be received until noon, Apr. 19, for furnishing coal for the school year 1915-1916. Address Clk. O. E. Bruell, Board of Education, Lorain, Ohio.

**+No. 523—Xenia, Ohio.**—Sealed proposals will be received until noon, Apr. 22, for furnishing about 470 tons of Pocahontas mine-run coal and 150 tons of Hocking lump coal. Coal is to be delivered in the bins of the different school-houses and is to be weighed on scales designated by the Board. Bids should be made f.o.b. Xenia. Address Clk. R. Schlesinger, 33 East Main St., Xenia, Ohio.

**+No. 524—Washington, D. C.**—Sealed proposals will be received until 2 p.m., May 3, for furnishing and delivering during the fiscal year ending June 30, 1916, coal for use in the various branches of the Government of the District of Columbia. Address Comr. Oliver P. Newman, Room 320, District Building, Washington, D. C.

**+No. 525—Washington, D. C.**—The following are the bids received on Mar. 29 for furnishing to the Naval Service about 100,000 tons of coal. Coal is to be of good quality, steaming, semibituminous mine-run, with at least 40% lump, and must be dry and practically free from slate, dirt, sulphur and other impurities: Castner, Curran & Bullitt, \$2.75; C. G. Blake Co., \$2.85; William C. Atwater & Co., \$2.80; Clinchfield Fuel Co., \$2.50; Chesapeake & Ohio Coal & Coke Co., \$2.75; Crozer-Pocahontas Co., \$2.85; Gulf Smokeless Coal Co., \$2.75; Maryland Coal & Coke Co., at the rate of not less than 8000 tons per month, \$2.73; at the rate of not less than 5000 tons per month, \$2.83; Archibald McNeill & Sons Co., \$2.74; Pocahontas Fuel Co., \$2.85; West Virginia Coal Co., \$2.80; Wittenburg Coal Co., \$2.80. Address Paymaster-Gen. of the Navy Samuel McGowan, Washington, D. C.

**+No. 526—Easton, Penn.**—Sealed proposals were received up to 4 p.m., Apr. 7, for furnishing the various school buildings with 50 tons pea, 100 tons nut, 550 tons stove and 50 tons egg coal. All coal is to be well screened and from either Highland or Jeddo collieries. Address Chn. Dr. F. C. Sandt, Committee on Supplies, Easton, Penn.

**+No. 527—San Francisco, Calif.**—Sealed bids will be received until 11 a.m., Apr. 23, for furnishing coal and coke as required at the Posts in the Western Departments during the fiscal year commencing July 1, 1915. Address Col. H. S. Wallace, "Chronicle" Building, San Francisco, Calif.

**No. 528—Boston, Mass.**—The Boston Elevated Ry. Co. recently requested proposals for its coal requirements for one-, three- and five-year periods, and expects to close the business shortly. Address Pur. Agt. Edward Mahler, Bureau of Purchase, Boston Elevated Ry. Co., 101 Milk St., Boston, Mass.

**No. 529—Freeport, Ill.**—The Freeport Gas Co. will soon be in the market for about two cars per month of northern Illinois egg coal. Bidders should state the location of their mines and give the freight rate to Freeport. Address Mgr. E. D. V. Dickey, Freeport Gas Co., 156 Stephenson St., Freeport, Ill.

**+No. 530—Muscatine, Ohio.**—Sealed bids will be received until 5 p.m., Apr. 12, for furnishing about 300 tons of 1½-in. or 2-in. screened lump coal. Specifications are on file with the County Auditors in Muscatine and Louisa Counties, also the Harman Engineering Co., Peoria, Ill. Address County Audr. H. C. Shoemaker, Muscatine, Ohio.

**No. 531—Frankfort, Ky.**—Awards by the State Prison Commission for furnishing 12,000 tons of coal for the State Reformatory and 7000 for the School of Reform are expected to be made shortly. Address State Prison Commission, Frankfort, Ky.

**No. 532—Cincinnati, Ohio.**—Sealed bids will be received until noon, Apr. 14, for furnishing and delivering coal for the River Pumping Station and Water-Works Department. Proposals must be accompanied by a bond for \$1000 or a certified check. Bids must be submitted on printed forms, which will be furnished on request. Address Dir. of Pub. Service Philip Fosdick, City Hall, Cincinnati, Ohio.

**No. 533—Chicago, Ill.**—The Cole Manufacturing Co. here purchases 10 to 14 cars of Indiana mine-run coal per year for heating purposes only. The company does not contract. Address C. C. Cole, Cole Manufacturing Co., 3218 South Western Ave., Chicago, Ill.

#### CONTRACTS AWARDED

Note—Successful bidders are noted in **bold face type**.

**+No. 312—Chicago, Ill.**—The awards on this contract (p. 448), which provides for furnishing and delivering coal to the various pumping stations, were as follows, per ton:

**Bickett Coal & Coke Co.**—Chicago Ave. (lump), \$2.301; 14th St., (lump), \$2.394; Springfield Ave. (screenings), \$2.02; Rogers Park (lump), \$2.92; 63th St. (screenings), \$1.59; Lake View (nut), \$2.61.

**Edner Coal & Coke Co.**—Central Park Ave. (lump), \$1.97; Roseland (screenings), \$1.583.

**Pilsen Coal Co.**—22d St. (lump), \$2.168; Harrison St. (screenings), \$1.96.

Address Comr. of Pub. Wks. L. E. McGann, Room 406, City Hall, Chicago, Ill.

**No. 331—Springfield, Mass.**—This contract, which provides for furnishing 8000 to 10,000 tons of anthracite and bituminous coal (pp. 527 and 566), has been awarded as follows:

**Maynard Coal Co.**—250 tons Lackawanna stove or nut coal for Outside Poor; 55 tons Lackawanna stove or nut for Soldiers' Relief; delivery to be in ¼- and ½-ton lots as called for, at \$7.24 per ton.

**Ehrlich Coal Co.**—600 tons of Lehigh stove for Departments of Streets and Engineering, delivery to steam rollers, etc., in any part of the city, 500 tons prior to Sept. 1, 1915, 100 tons after Sept. 1, at \$6.78 per ton; 507 tons egg, 45 tons nut, 22 tons stove, for Fire Department; 12 tons Lehigh nut or stove for Board of Health; 25 tons Lehigh stove for Police Station No. 2; Indian Orchard, egg and stove, \$6.90; nut, \$7.10.

**Converse Coal Co.**—3300 tons bituminous for various schools; 700 tons for Almshouse; 900 tons for Municipal Heating Plant, at \$4.43 per ton; 1475 tons of Lackawanna egg and stove for various schools, at \$6.83 per ton.

**Tait Coal Co.**—1930 gross tons grate coal for various schools, at \$6.50 per gross ton.

**+No. 332—Buffalo, N. Y.**—This contract (p. 528), involving 35,000 tons of ¾-in. slack coal, has been awarded to the **Friel Coal & Coke Co.** at \$1.88 per ton. Address Comr.-Colonel Francis G. Ward, Department of Public Works, Buffalo, N. Y.